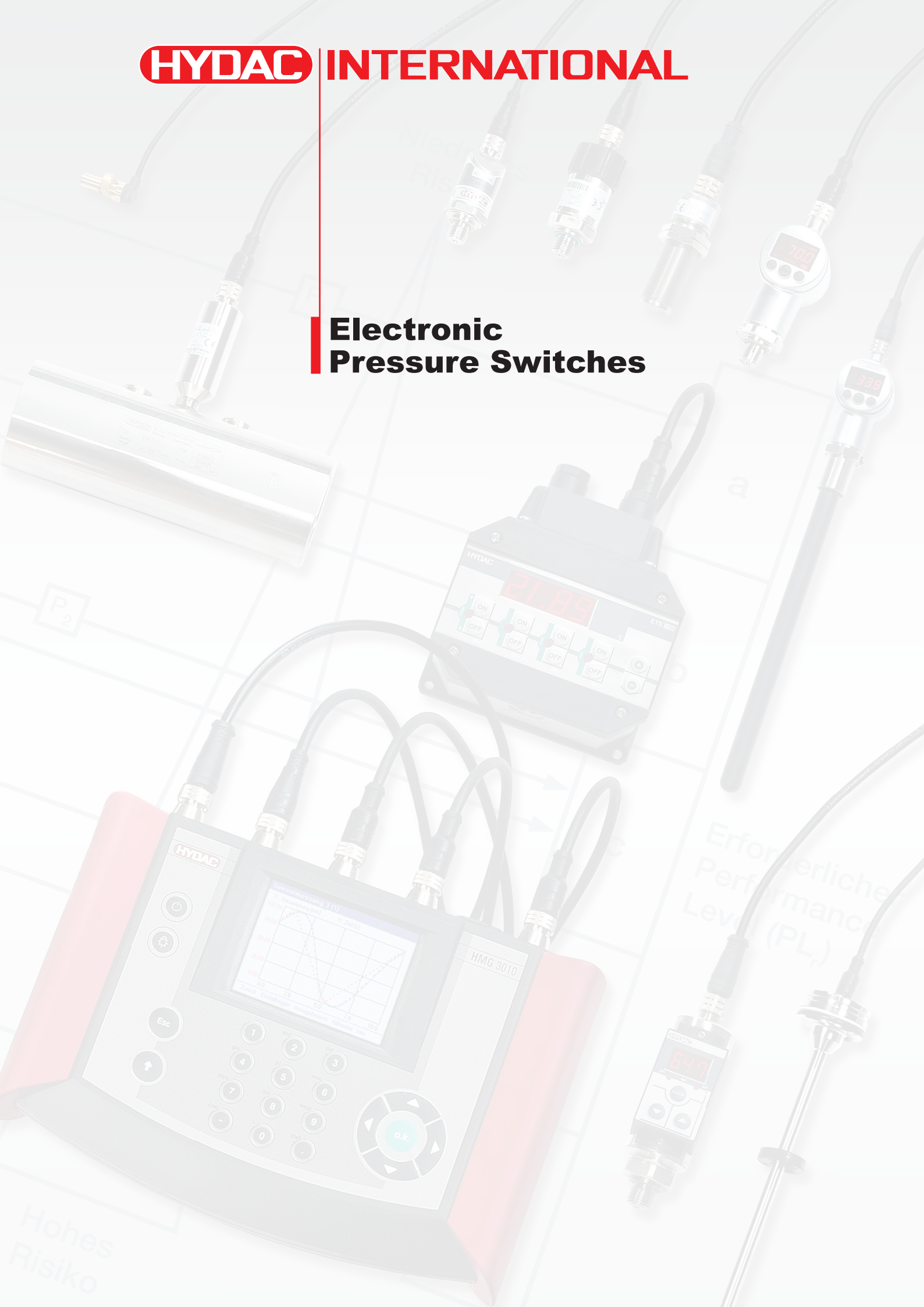


## Electronic Pressure Switches



## ELECTRONIC PRESSURE SWITCHES

Electronic pressure switches for general applications:

EDS 3400
EDS 3400 IO-Link
EDS 3300
EDS 3300 IO-Link
EDS 3100
EDS 3100 IO-Link
EDS 300
EDS 300 Approvals for shipping
EDS 8000
EDS 601
EDS 1700
EDS 4400 Programmable
EDS 4300 Programmable
EDS 820 IO-Link

Electronic pressure switches offer a multitude of advantages in comparison to mechanical pressure switches and contact pressure gauges. Their superiority is shown through greater accuracy, freedom from wear, long-term stability, simpler operation and the high number of switching cycles, among other things.

Further electronic pressure switches for special applications can be found in the Sections "Pressure Sensors with Flush Membrane", "Sensors for Potentially Explosive Atmospheres" and "OEM Products for Large Volume Production".

Electronic Pressure Switches	EDS 3400	EDS 3300	EDS 3100	EDS 300	EDS 8000	EDS 601	EDS 1700	EDS 4400	EDS 4300	EDS 4100	EDS 820	EDS 810	EDS 710	EDS 410
Accuracy (max. error)	1.0	1.0	1.0	1.0	1.0	1.0	0.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Low pressure (up to 500 psi)		✓	✓	✓	✓	✓	✓		✓	✓	✓		✓	✓
High pressure (from 500 psi)	✓			✓	✓	✓	✓	✓			✓	✓	✓	✓
Relative pressure	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
Absolute pressure			✓							✓				
Number of switching outputs	2	2	2	2	2	2	4	2	2	2	2	2	1	2
Analogue output	✓	✓	✓	✓		✓	✓							
Digital display	✓	✓	✓	✓	✓	✓	✓							
Programmable	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
Factory-set (not field-adjustable)								✓	✓	✓		✓	✓	✓
DESINA-compliant	✓	✓	✓											
VDMA Menu Navigation	✓	✓	✓		✓									
Available as individual units	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
OEM product for large volume production								✓	✓	✓		✓	✓	✓
Flush membrane	✓	✓												
IO Link Interface	✓	✓	✓								✓			
ECE type authorisation (approved for road vehicles)												✓		
Approval for potentially explosive atmospheres								✓	✓	✓				
Approvals for Shipping				✓										
UL Approval	✓	✓	✓		✓							✓		

**Note:** Not all feature combinations are possible. For precise information, please consult the relevant data sheet.



## Description:

The EDS 3400 is a compact electronic pressure switch with integrated digital display for relative pressure measurement in the high-pressure range. The instrument has a stainless steel measurement cell with thin-film strain gauge. The instrument can have one or two switching outputs and there is the option of an additional switchable analog 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 unit of measurement. When changing to a different measurement unit, the instrument automatically converts all the switching settings to the new unit of measurement. In addition, the EDS 3400 is also available in a DESINA®-compliant version. The main applications of the EDS 3400 are primarily in hydraulics and pneumatics, as well as in refrigeration and air conditioning technology.

## Special features:

- 1 or 2 PNP transistor switching outputs, up to 1.2 A load per output
- Accuracy  $\leq \pm 0.5\%$  FS B.F.S.L.
- Optional switchable analog output (4 .. 20 mA / 0 .. 10 V)
- 4-digit digital display
- Optimum alignment - can be rotated in two planes (axes)
- Measured value can be displayed in bar, psi or MPa
- User-friendly due to key programming
- Switching points and switch-back hysteresis can be adjusted independently
- Many useful additional functions
- Optional Desina®-compliant pin configuration with diagnostic function



## Electronic Pressure Switch EDS 3400

### Technical data:

Input data	
Measuring ranges	1000, 3000, 6000, 9000 psi
Overload pressures	2900, 7250, 11600, 14500 psi
Burst pressures	7250, 14500, 29000, 29000 psi
Mechanical connection	9/16-18 UNF 2A (SAE 6 male)
Torque value	15 lb-ft (20 Nm)
Parts in contact with medium	Mech. connection: Stainless steel Seal: FPM (9/16-18 UNF 2A, SAE-6 male)
Output data	
Accuracy to DIN 16086, Max. setting (display, analog output)	$\leq \pm 0.5\%$ FS typ. $\leq \pm 1\%$ FS max.
Repeatability	$\leq \pm 0.25\%$ FS max.
Temperature drift	$\leq \pm 0.014\%$ /°F max zero point $\leq \pm 0.014\%$ /°F max. range
Analog output (optional)	
Signal	selectable: 4 .. 20 mA      load resistance max. 500 $\Omega$ 0 .. 10 V      load resistance min. 1 k $\Omega$
Switch outputs	
Type	PNP transistor output
Switching current	max. 1.2 A
Switching cycles	> 100 million
Reaction time	< 10 ms
Long-term drift	$\leq \pm 0.3\%$ FS typ. / year
DESINA® diagnostic signal (Pin 2)	
Function	OK: HIGH level / not OK: LOW level
Level	HIGH: approx. +U <sub>b</sub> / LOW: < +0.3 V
Environmental conditions	
Compensated temperature range	14..158 °F
Operating temperature range	-13..+176°F (-13..+140°F acc. to UL spec.)
Storage temperature range	-40..176 °F
Fluid temperature range	-13..176 °F
CE mark	EN 61000-6-1 / 2 / 3 / 4
cULus mark <sup>1)</sup>	Certificate No. E318391
Vibration resistance to DIN EN 60068-2-6 at 10 .. 500 Hz	$\leq 10$ g
Shock resistance to DIN EN 60068-2-29 (11 ms)	$\leq 50$ g
Protection class to IEC 60529	IP 67
Other data	
Supply voltage	9 .. 35 V DC without analog output 18 .. 35 V DC with analog output - limited energy - according to 9.3 UL 61010; Class 2; UL 1310/1585; LPS UL 60950
for use acc. to UL spec.	
Current consumption	max. 2.455 A total max. 35 mA with inactive switching outputs max. 55 mA with inactive switching outputs and analog output
Display	4-digit, LED, 7 segment, red, height of digits 7 mm
Weight	~ 120 g

Note: Excess voltage, override protection and short circuit protection are provided.  
FS (Full Scale) = relative to the complete measurement range

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

## Setting options:

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

## Setting ranges for the switch outputs:

Switching point function

Meas. range in psi	Switch point in psi	Hysteresis in psi	Increment* in psi
0 .. 1000	16 .. 1000	6 .. 990	2
0 .. 3000	45 .. 3000	15 .. 2970	5
0 .. 6000	90 .. 6000	30 .. 5940	10
0 .. 9000	140 .. 9000	60 .. 8900	20

Window function

Meas. range in psi	Lower switch value in psi	Upper switch value in psi	Increment* in psi
0 .. 1000	6 .. 990	16 .. 1000	2
0 .. 3000	15 .. 2970	45 .. 3000	5
0 .. 6000	30 .. 5940	90 .. 6000	10
0 .. 9000	60 .. 8900	140 .. 9000	20

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

## Additional functions:

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

## Model code:

EDS 3 4 X X - X - XXXX - 400

### Mechanical connection

7 = 9/16-18 UNF 2A (SAE 6 male)

### 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"

### 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 analog output

only in conjunction with electrical connection type "6"

5 = 2 switching outputs and 1 analog output

only in conjunction with electrical connection type "8"

### Pressure ranges in psi

1000, 3000, 6000, 9000

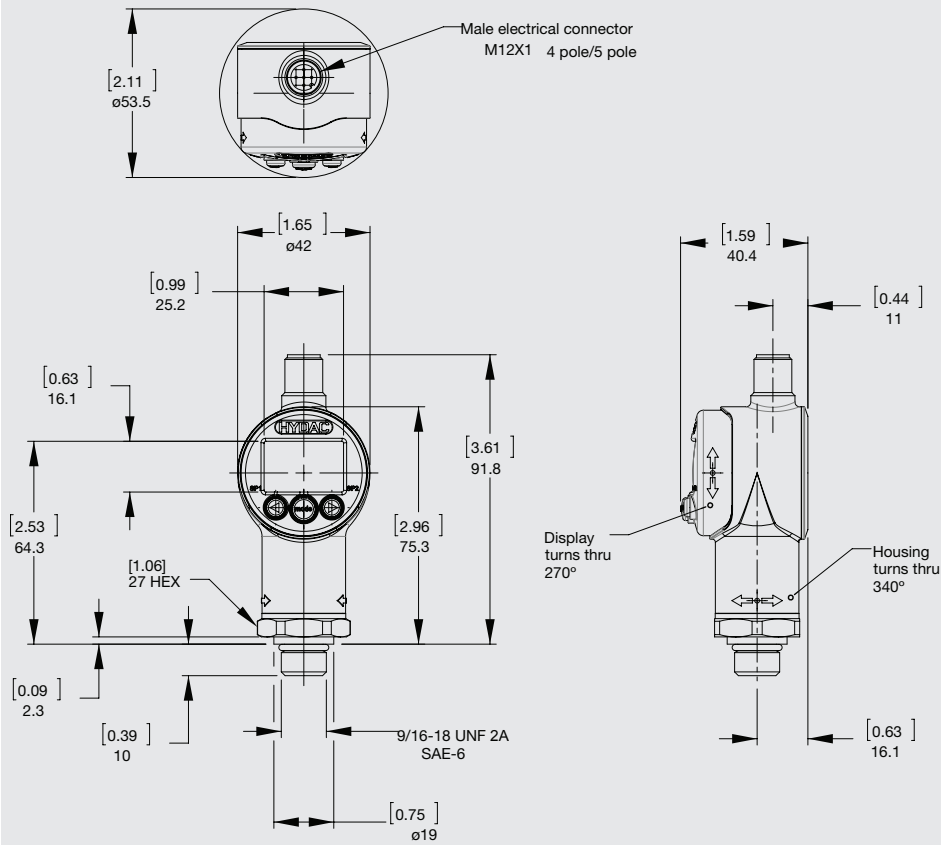
### Modification number

400 = Standard in psi

### Accessories:

Appropriate accessories, such as electrical connectors, mechanical adapters, splash guards, clamps for wall-mounting etc can be found in the Accessories brochure.

## Dimensions:



## Note:

The information in this brochure relates to the operating conditions and applications described.

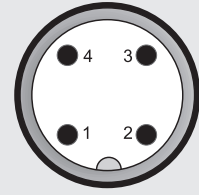
For applications or operating conditions not described, please contact the relevant technical department.

Subject to technical modifications.

For European mechanical connection and bar ranges see European catalog

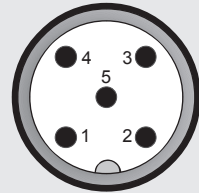
## Pin connections:

M12x1, 4 pole



Pin	EDS 34X6-1	EDS 34X6-2	EDS 34X6-3
1	+U <sub>B</sub>	+U <sub>B</sub>	+U <sub>B</sub>
2	n.c.	SP 2	Analog
3	0 V	0 V	0 V
4	SP 1	SP 1	SP 1

M12x1, 5 pole



Pin	EDS 34X8-5
1	+U <sub>B</sub>
2	Analog
3	0 V
4	SP 1
5	SP 2

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## Electronic Pressure Switch EDS 3400 with IO-Link Interface



### Description:

The EDS 3400 with IO-Link communication interface is a compact electronic pressure switch with integrated digital display for relative pressure measurement in the high-pressure range.

The device is equipped with a switching output and additional output that can be configured as switching or analog (4 .. 20 mA or 0 .. 10 V).

Compared with the standard version, the IO-Link interface enables bidirectional communication between the device and the control.

Parameterization and cyclical transmission of process and service data is therefore possible.

The pressure switch series EDS 3400 with communication interface IO-Link according to specification V1.1 has been specially designed for connecting sensors in automation systems.

Typical fields of application are machine tools, handling and assembly automation, intralogistics or the packaging industry.

### Special features:

- 1 PNP transistor switching output
- 1 universal output, configurable as PNP transistor switching output or analog output
- Accuracy  $\leq \pm 0.5\%$  FS B.F.S.L.
- 4-digit digital display
- Optimum alignment: can be rotated in two axes

### Technical data:

Input data	
Measuring ranges	1000, 3000, 6000, 9000 psi
Overload range	2900, 7250, 11600, 14500 psi
Burst pressures	7250, 14500, 29000, 29000 psi
Mechanical connection	9/16-18 UNF 2A (SAE 6 male)
Torque value	15 lb-ft (20 Nm)
Parts in contact with medium	Mech. connection: Stainless steel Sensor cell: Stainless steel Seal: FPM
Output data	
Output signals	Output 1: PNP Transistor switching output Output 2: can be configured as PNP transistor switching output or analog output
Accuracy to DIN 16086	$\leq \pm 0.5\%$ FS typ.
Max. setting (display, analog output)	$\leq \pm 1\%$ FS max.
Repeatability	$\leq \pm 0.25\%$ FS max.
Temperature drift	$\leq \pm 0.014\%$ /°F max zero point $\leq \pm 0.014\%$ /°F max. range
Analog output	
Signal	selectable: 4 .. 20 mA load resistance max. 500 $\Omega$ 0 .. 10 V load resistance min. 1 k $\Omega$
Switch outputs	
Type	PNP transistor switching output
Switching current	max. 250 mA per output
Switching cycles	> 100 million
Reaction time	< 10 ms
Long term drift	$\leq \pm 0.3\%$ FS typ. / year
Parameterization	
	<b>Via IO-Link interface, with HYDAC programming device HPG 3000 or push buttons on the EDS 3400</b>
Environmental conditions	
Compensated temperature range	14..158°F
Operating temperature range	-13..+176°F (-13..+140°F acc. to UL spec.)
Storage temperature range	-40..176°F
Fluid temperature range	-13..176°F
CE-mark	EN 61000-6-1 / 2 / 3 / 4
Vibration resistance according to DIN EN 60068-2-6 (0 .. 500 Hz)	$\leq 10$ g
Shock resistance according to DIN EN 60068-2-29 (11 ms)	$\leq 50$ g
Protection class to IEC 60529	IP 67
Other data	
Supply voltage	9 .. 35 V DC without analog output 18 .. 35 V DC with analog output
Current consumption	$\leq 0.535$ A with active switching outputs $\leq 35$ mA with inactive switching outputs $\leq 55$ mA with inactive switching output and analog output
Display	4-digit, LED, 7-segment, red, height of digits 7 mm
Weight	~ 120 g

Note: Excess voltage, override protection and short circuit protection are provided.  
FS (Full Scale) = relative to complete measuring range

## Setting options:

All terms and symbols used for setting the EDS 3400 as well as the menu structure comply with the specifications in the VDMA Standard for pressure switches.

## Setting ranges for the switch outputs:

Measuring range in psi	Lower limit of RP / FL in psi	Upper limit of SP / FH in psi
0 .. 1000	10	1000
0 .. 3000	30	3000
0 .. 6000	60	6000
0 .. 9000	80	9000

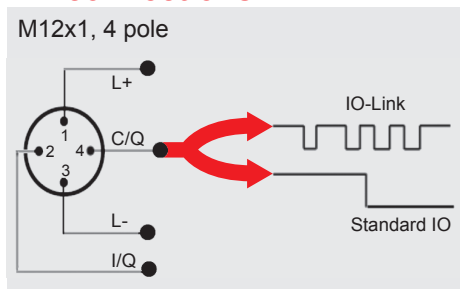
Measuring range in psi	Min. difference betw. RP and SP & FL and FH in psi	Increment*
0 .. 1000	10	2
0 .. 3000	30	5
0 .. 6000	60	10
0 .. 9000	80	20

\* All ranges given in the table are adjustable 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 (switching 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
- Analog output signal selectable: 4 .. 20 mA or 0 .. 10 V
- Pressure can be displayed in bar, psi, MPa.

## Pin connections:



Pin	Signal	Description
1	L+	Supply voltage
2	I/Q	Switching output (SP2) / analog output
3	L-	Gnd
4	C/Q	IO-Link communication / switching output (SP1)

## IO-Link-specific data:

Baud rate	38.4 kBaud *
Cycle time	2.5 ms
Process data width	16 Bit
Frame type	2.2
Specification	V1.1

\* Connection with unshielded standard sensor line possible up to a max. line length of 20 m.

Download the IO Device Description (IODD) from:  
<http://www.hydac.com/de-en/service/downloads-software-on-request/>

## Model code:

**EDS 3 4 X 6 - F31 - XXXX - 400**

### Mechanical connection

7 = 9/16-18 UNF 2A (SAE 6 male)

### Electrical connection

6 = Male M12x1, 4 pole  
 (connector not supplied)

### Output

F31 = IO Link Interface

### Pressure ranges in psi

1000, 3000, 6000, 9000

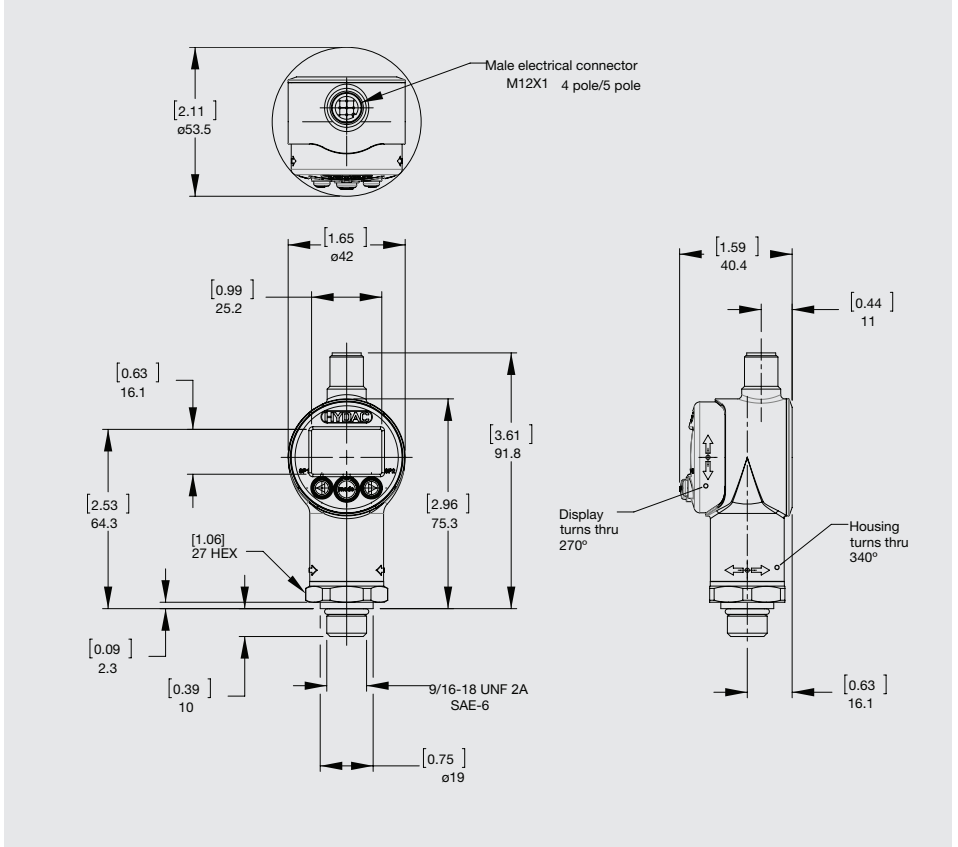
### Modification number

400 = Standard in psi

## Accessories:

Appropriate accessories, such as electrical connectors, mechanical adapters, splash guards, clamps for wall-mounting etc can be found in the Accessories brochure.

## 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. For European mechanical connection and psi ranges see European Catalog.

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## Electronic Pressure Switch EDS 3300

### Description:

The EDS 3300 is a compact electronic pressure switch with integrated digital display for relative pressure measurement in the low-pressure range. It has a ceramic measuring cell with thick-film strain gauge. The instrument can have one or two switching outputs with the option of an additional switchable analog output signal (4 .. 20 mA or 0 .. 10 V). A special design feature of the EDS 3300 is that the display can be moved in two planes (axes). The instrument 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 unit of measurement. When changing to a different measurement unit, the instrument automatically converts all the switching settings to the new unit of measurement. In addition, the EDS 3300 is also available in a DESINA®-compliant version.

The main applications of the EDS 3300 are primarily in hydraulics and pneumatics, as well as in refrigeration and air conditioning technology.

### Special features:

- 1 or 2 PNP transistor switching outputs, up to 1.2 A load per output
- Accuracy  $\leq \pm 0.5\%$  FS B.F.S.L.
- Optional switchable analog output (4 .. 20 mA / 0 .. 10 V)
- 4-digit digital display
- Optimum alignment - can be rotated in two axes
- Measured value can be displayed in bar, psi or MPa
- User-friendly due to key programming
- Switching points and switch-back hysteresis can be adjusted independently
- Many useful additional functions
- Optional Desina®-compliant pin configuration with diagnostic function



### Technical data:

Input data	
Measuring ranges	-14..75, 15, 30, 50, 150, 250, 500 psi
Overload pressures	290, 45, 100, 150, 450, 725, 1500 psi
Burst pressures	400, 70, 150, 250, 650, 1000, 2500 psi
Mechanical connection	1/4-18 NPT (male)
Torque value	30lb-ft (40 Nm)
Parts in contact with medium	Mech. connection: Stainless steel Sensor cell: Ceramic Seal: FPM / EPDM (as per model code)
Output data	
Accuracy to DIN 16086, Max. setting (display, analog output)	$\leq \pm 0.5\%$ FS typ. $\leq \pm 1\%$ FS max.
Repeatability	$\leq \pm 0.25\%$ FS max.
Temperature drift	$\leq \pm 0.014\%$ / °F max zero point $\leq \pm 0.014\%$ / °F max. range
Analog output (optional)	
Signal	selectable: 4 .. 20 mA      load resistance max. 500 $\Omega$ 0 .. 10 V      load resistance min. 1 k $\Omega$
Switch outputs	
Type	PNP transistor output
Switching current	max. 1.2 A
Switching cycles	> 100 million
Reaction time	< 10 ms
Long-term drift	$\leq \pm 0.3\%$ FS typ. / year
DESINA® diagnostic signal (Pin 2)	
Function	OK: HIGH level / not OK: LOW level
Level	HIGH: approx. +U <sub>B</sub> / LOW: < +0.3 V
Environmental conditions	
Compensated temperature range	14..158 °F
Operating temperature range	-13..+176 °F (-13..+140 °F acc. to UL spec.)
Storage temperature range	-40..176 °F
Fluid temperature range	-13..176 °F
CE mark	EN 61000-6-1 / 2 / 3 / 4
UL mark <sup>1)</sup>	Certificate No. E318391
Vibration resistance to DIN EN 60068-2-6 at 10 .. 500 Hz	$\leq 10$ g
Shock resistance to DIN EN 60068-2-29 (11 ms)	$\leq 50$ g
Protection class to IEC 60529	IP 67
Other data	
Supply voltage	9 .. 35 V DC without analog output 18 .. 35 V DC with analog output - limited energy - according to 9.3 UL 61010; Class 2; UL 1310/1585; LPS UL 60950
for use acc. to UL spec.	
Current consumption	max. 2.455 A total max. 35 mA with inactive switching outputs max. 55 mA with inactive switching outputs and analog output
Display	4-digit, LED, 7 segment, red, height of digits 7 mm
Weight	~ 120 g

Note: Excess voltage, override and short circuit protection are provided.  
FS (Full Scale) = relative to complete measuring range  
<sup>1)</sup> Environmental conditions according to 1.4.2 UL 61010-1; C22.2 No 61010-1

## Setting options:

All settings offered by the EDS 3300 are grouped in 2 easy-to-navigate menus. In order to prevent unauthorized adjustment of the device, a programming lock can be set.

## Setting ranges for the switch outputs:

Switching point function

Meas. range in psi	Switch point in psi	Hysteresis in psi	Increment* in psi
-14 .. 75	-12.6 .. 75	0.6 .. 74.0	0.2
0 .. 15	0.25 .. 15	0.10 .. 14.85	0.05
0 .. 30	0.45 .. 30	0.15 .. 29.70	0.05
0 .. 50	0.8 .. 50	0.3 .. 79.5	0.1
0 .. 150	2.5 .. 150	1.0..148.5	0.5
0 .. 250	4.0 .. 250	1.5 .. 247.5	0.5
0 .. 500	8 .. 500	3 .. 495	1

Window function

Meas. range in psi	Lower switch value in psi	Upper switch value in psi	Increment* in psi
-14 .. 75	0.6..74.0	-12.6 .. 75	0.2
0 .. 15	0.10..14.85	0.25 .. 15	0.05
0 .. 30	0.15..29.70	0.45 .. 30	0.05
0 .. 50	0.3..79.5	0.8 .. 50	0.1
0 .. 150	1.0..148.5	2.5 .. 150	0.5
0 .. 250	1.5..247.5	4.0 .. 250	0.5
0 .. 500	3..495	8 .. 500	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 and switch-off 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
- Analog output signal selectable 4 .. 20 mA or 0 .. 10 V
- Pressure can be displayed in the measurement units bar, psi, MPa. The scaling can also be adapted to indicate force, weight, etc.

## Model code:

EDS 3 3 X X - X - XXXX - 400 - X 1

### Mechanical connection

8 = 1/4-18 NPT (male)

### 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"

### 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 analog output  
only in conjunction with electrical connection type "6"

5 = 2 switching outputs and 1 analog output  
only in conjunction with electrical connection type "8"

### Pressure ranges in psi

0089(-14..75), 0015, 0030, 0050, 0150, 0250, 0500

### Modification number

400 = Standard in psi

### Seal material (in contact with fluid)

F = FPM seal (e.g.: for hydraulic oils)

E = EPDM seal (e.g.: for water, refrigerants)

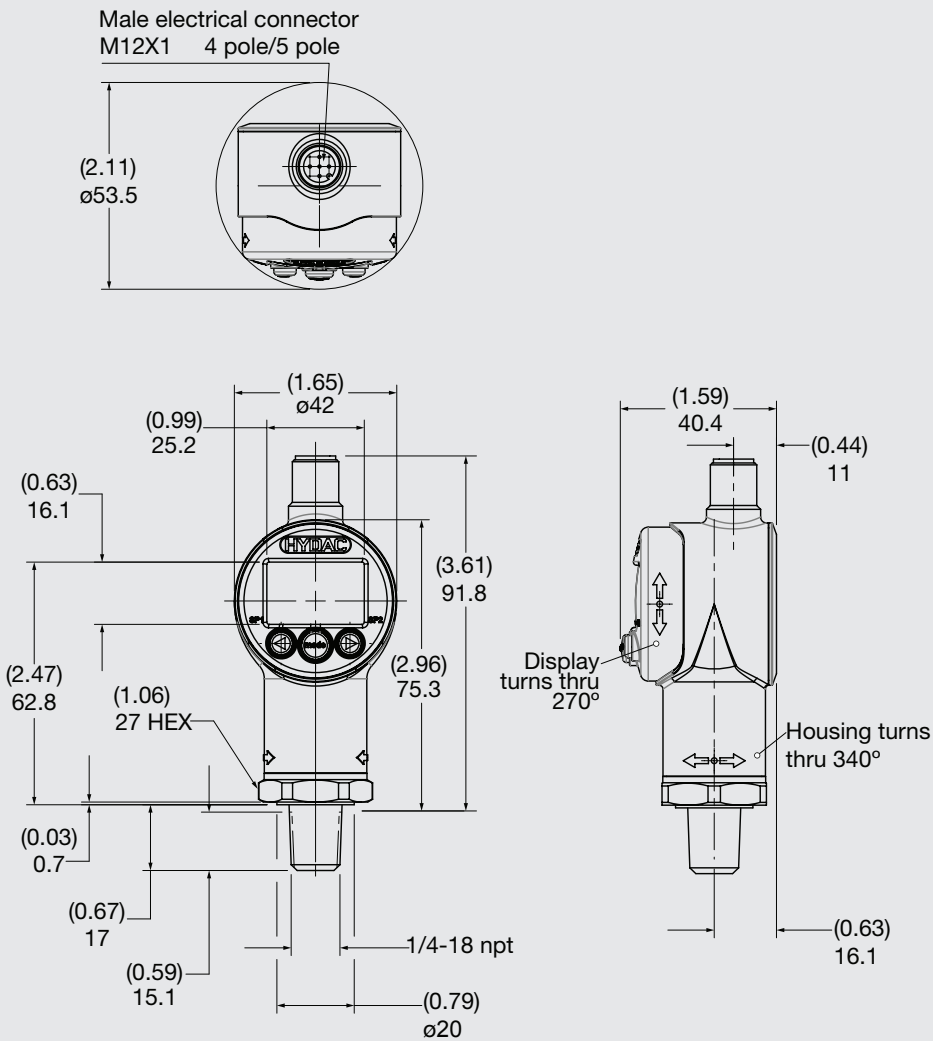
### Material of connection (in contact with fluid)

1 = Stainless steel

### Accessories:

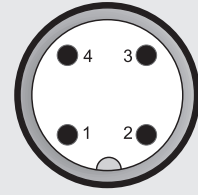
Appropriate accessories, such as electrical connectors, mechanical adapters, splash guards, clamps for wall-mounting etc can be found in the Accessories brochure.

## Dimensions:



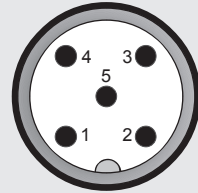
## Pin connections:

M12x1, 4 pole



Pin	EDS 33X6-1	EDS 33X6-2	EDS 33X6-3
1	+U <sub>B</sub>	+U <sub>B</sub>	+U <sub>B</sub>
2	n.c.	SP 2	Analog
3	0 V	0 V	0 V
4	SP 1	SP 1	SP 1

M12x1, 5 pole



Pin	EDS 33X8-5
1	+U <sub>B</sub>
2	Analog
3	0 V
4	SP 1
5	SP 2

## Note:

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For European mechanical connection and bar ranges see European Catalog

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## Electronic Pressure Switch EDS 3300 with IO-Link Interface



### Description:

The EDS 3300 with IO-Link communication interface is a compact electronic pressure switch with integrated digital display for relative pressure measurement in the low-pressure range.

The device is equipped with a switching output and additional output that can be configured as switching or analog (4 .. 20 mA or 0 .. 10 V).

Compared with the standard version, the IO-Link interface enables bidirectional communication between the device and the control.

Parameterization and cyclical transmission of process and service data is therefore possible.

The pressure switch series EDS 3300 with communication interface IO-Link according to specification V1.1 has been specially designed for connecting sensors in automation systems.

Typical fields of application are machine tools, handling and assembly automation, intralogistics or the packaging industry.

### Special features:

- IO Link Interface
- 1 PNP transistor switching output
- Additional signal output, can be configured as PNP transistor switching output or analog output
- Accuracy  $\leq \pm 0.5\%$  FS B.F.S.L.
- 4-digit digital display
- Display can be rotated in two axes for optimal alignment

### Technical data:

Input data	
Measuring ranges	-14 to 75, 15, 30, 50, 150, 250, 500 psi
Overload range	290, 45, 100, 150, 450, 725, 1500 psi
Burst pressures	400, 70, 150, 250, 650, 1000, 2500 psi
Mechanical connection	1/4-18 NPT (male)
Torque value	30lb-ft (40 Nm)
Parts in contact with medium	Mech. connection: Stainless steel Sensor cell: Ceramic Seal: FPM / EPDM (as per model code)
Output data	
Output signals	Output 1: PNP transistor switching output Output 2: can be configured as PNP transistor switching output or analog output
Accuracy to DIN 16086	$\leq \pm 0.5\%$ FS typ.
Max. setting (display, analog output)	$\leq \pm 1\%$ FS max.
Repeatability	$\leq \pm 0.25\%$ FS max.
Temperature drift	$\leq \pm 0.014\%$ /°F max zero point $\leq \pm 0.014\%$ /°F max. range
Analog output	
Signal	selectable: 4 .. 20 mA load resistance max. 500 $\Omega$ 0 .. 10 V load resistance min. 1 k $\Omega$
Switch outputs	
Type	PNP transistor switching output
Switching current	max. 250 mA per output
Switching cycles	> 100 million
Reaction time	< 10 ms
Long term drift	$\leq \pm 0.3\%$ FS typ. / year
Parameterization	
	<b>Via IO-Link interface, with HYDAC programming device HPG 3000 or push buttons on the EDS 3300</b>
Environmental conditions	
Compensated temperature range	14..158 °F
Operating temperature range	-13..+176 °F
Storage temperature range	-40..176 °F
Fluid temperature range	-13..176 °F
CE-mark	EN 61000-6-1 / 2 / 3 / 4
Vibration resistance according to DIN EN 60068-2-6 (0 .. 500 Hz)	$\leq 10$ g
Shock resistance according to DIN EN 60068-2-29 (11 ms)	$\leq 50$ g
Protection class to IEC 60529	IP 67
Other data	
Supply voltage	9 .. 35 V DC without analog output 18 .. 35 V DC with analog output
Current consumption	$\leq 0.535$ A with active switching outputs $\leq 35$ mA with inactive switching outputs $\leq 55$ mA with inactive switching output and analog output
Display	4-digit, LED, 7-segment, red, height of digits 7 mm
Weight	~ 120 g

Note: Excess voltage, override protection and short circuit protection are provided.  
FS (Full Scale) = relative to complete measuring range

## Setting options:

All terms and symbols used for setting the EDS 3300 as well as the menu structure comply with the specifications in the VDMA Standard for pressure switches.

## Setting ranges for the switch outputs:

Measuring range in psi	Lower limit of RP / FL in psi	Upper limit of SP / FH in psi
-14.5...75	-13.2	75
0..15	0.15	15
0..30	0.30	30
0..50	0.5	50
0..150	1.5	150
0..250	2.5	250
0..500	5	500

Measuring range in psi	Min. difference betw. RP and SP & FL and FH in psi	Increment* in psi
-14.5...75	-13.2	0.2
0..15	0.15	0.05
0..30	0.30	0.05
0..50	0.5	0.1
0..150	1.5	0.5
0..250	2.5	0.5
0..500	5	1

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

SP = switch point

RP = switch-back point

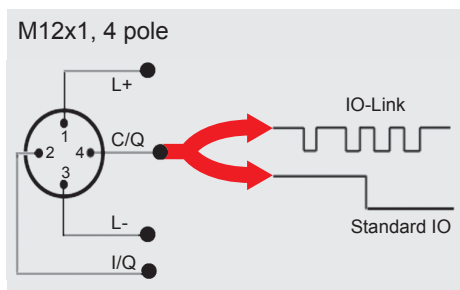
FL = pressure window lower value

FH = pressure window upper value

## Additional functions:

- Switching mode of the switching outputs adjustable (switching 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
- Analog output signal selectable to 4 .. 20 mA or 0 .. 10 V
- Pressure can be displayed in bar, psi, MPa.

## Pin connections:



Pin	Signal	Description
1	L+	Supply voltage
2	I/Q	Switching output (SP2) / analog output
3	L-	Gnd
4	C/Q	IO-Link communication / switching output (SP1)

## IO-Link-specific data:

Baud rate	38.4 kBaud *
Cycle time	2.5 ms
Process data width	16 Bit
Frame type	2.2
Specification	V1.1

\* Connection with unshielded standard sensor line possible up to a max. line length of 20 m.

Download the IO Device Description (IODD) from:

<http://www.hydac.com/de-en/service/downloads-software-on-request/>

## Model code:

EDS 3 3 X 6 - F31 - XXXX - 400 - X 1

### Mechanical connection

8 = 1/4-18 NPT (male)

### Electrical connection

6 = Male M12x1, 4 pole (connector not supplied)

### Output

F31 = IO Link Interface

### Pressure ranges in psi

0089(-14..75), 0015, 0030, 0050, 0150, 0250, 0500

### Modification number

400 = Standard

### Seal material (in contact with fluid)

F = FPM seal (e.g. for hydraulic oils)

E = EPDM seal (e.g. for water, refrigerants)

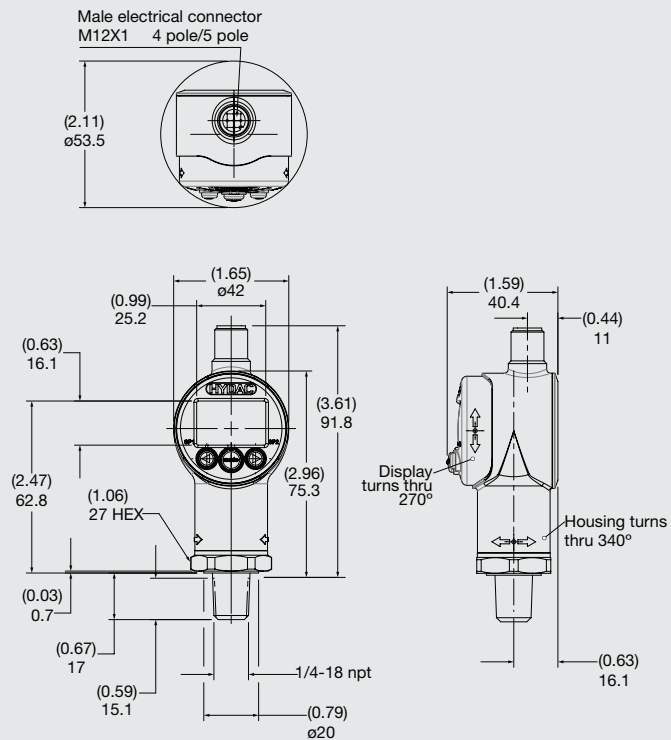
### Material of connection (in contact with fluid)

1 = Stainless steel

## Accessories:

Appropriate accessories, such as electrical connectors, mechanical adapters, splash guards, clamps for wall-mounting etc can be found in the Accessories brochure.

## 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.

For European mechanical connection and bar ranges see European Catalog

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## Electronic Absolute Pressure Switch EDS 3100

### 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 measuring cell with thick-film strain gauge. The instrument can have one or two switching outputs, and there is the option of an additional switchable analog output signal (4 .. 20 mA or 0 .. 10 V).

A special design feature of the EDS 3100 is that the display can be rotated in two planes. The instrument 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 unit of measurement. When changing to a different measurement unit, the instrument automatically converts all the switching settings to the new unit of measurement. In addition, the EDS 3100 is also available in a DESINA®-compliant version.

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

### Special features:

- 1 or 2 PNP transistor switching outputs, up to 1.2 A load per output
- Accuracy  $\leq \pm 0.5\%$  FS B.F.S.L.
- Optional switchable analog output (4 .. 20 mA / 0 .. 10 V)
- 4-digit digital display
- Optimum alignment - can be rotated in two axes
- Measured value can be displayed in bar, psi or MPa
- User-friendly due to key programming
- Switching points and switch-back hysteresis can be adjusted independently
- Many useful additional functions
- Optional Desina®-compliant pin configuration with diagnostic function



### Technical data:

Input data	
Measuring ranges	15, 50 psia
Overload pressures	45, 150 psia
Burst pressures	70, 250 psia
Mechanical connection	1/4-18 NPT (male)
Torque value	30lb-ft (40 Nm)
Parts in contact with medium	Mech. connection: Stainless steel Sensor cell: Ceramic Seal: FPM / EPDM (as per model code)
Output data	
Accuracy to DIN 16086, Max. setting (display, analog output)	$\leq \pm 0.5\%$ FS typ. $\leq \pm 1\%$ FS max.
Repeatability	$\leq \pm 0.25\%$ FS max.
Temperature drift	$\leq \pm 0.014\%$ /°F max zero point $\leq \pm 0.014\%$ /°F max. range
Analog output (optional)	
Signal	selectable: 4 .. 20 mA      load resistance max. 500 $\Omega$ 0 .. 10 V        load resistance min. 1 k $\Omega$
Switch outputs	
Type	PNP transistor output
Switching current	max. 1.2 A
Switching cycles	> 100 million
Reaction time	< 10 ms
Long-term drift	$\leq \pm 0.3\%$ FS typ. / year
DESINA® diagnostic signal (Pin 2)	
Function	OK: HIGH level / not OK: LOW level
Level	HIGH: approx. +U <sub>g</sub> / LOW: < +0.3 V
Environmental conditions	
Compensated temperature range	14..158°F
Operating temperature range	-13..+176°F (-13..+140°F acc. to UL spec.)
Storage temperature range	-40..176°F
Fluid temperature range	-13..176°F
CE mark	EN 61000-6-1 / 2 / 3 / 4
eURus mark <sup>1)</sup>	Certificate No. E318391
Vibration resistance to DIN EN 60068-2-6 at 10 .. 500 Hz	$\leq 10$ g
Shock resistance to DIN EN 60068-2-29 (11 ms)	$\leq 50$ g
Protection class to IEC 60529	IP 67
Other data	
Supply voltage	9 .. 35 V DC without analog output 18 .. 35 V DC with analog output for use acc. to UL spec. - limited energy - according to 9.3 UL 61010; Class 2; UL 1310/1585; LPS UL 60950
Current consumption	max. 2.455 A total max. 35 mA with inactive switching outputs max. 55 mA with inactive switching outputs and analog output
Display	4-digit, LED, 7 segment, red, height of digits 7 mm
Weight	~ 120 g

Note: Excess voltage, override protection and short circuit protection are provided.

**FS (Full Scale)** = relative to the complete measurement range  
1) Environmental conditions according to 1.4.2 UL 61010-1; C22.2 No 61010-1

## Setting options:

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

## Setting ranges for the switch outputs:

### Switching point function

Meas. range in psi	Switch point in psi	Hysteresis in psi	Increment* in psi
0 .. 15	0.25 .. 15.00	0.10 .. 14.85	0.05
0 .. 50	0.8 .. 50.00	0.3 .. 49.5	0.1

### Window function

Meas. range in psi	Lower switch value in psi	Upper switch value in psi	Increment* in psi
0 .. 15	0.25 .. 15.00	0.10 .. 14.85	0.05
0 .. 50	0.8 .. 50.00	0.3 .. 49.5	0.1

\* 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 and switch-off 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
- Analog 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.

## Model code:

EDS 3 1 X X - X - XXXX - 400 - X 1

### Mechanical connection

8 = 1/4-18 NPT (male)

### 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"

### 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 analog output

only in conjunction with electrical connection type "6"

5 = 2 switching outputs and 1 analog output

only in conjunction with electrical connection type "8"

### Pressure ranges in psia

0015, 0050

### Modification number

400 = Standard

### Seal material (in contact with fluid)

F = FPM seal (e.g.: for hydraulic oils)

E = EPDM seal (e.g.: for water, refrigerants)

### Material of connection (in contact with fluid)

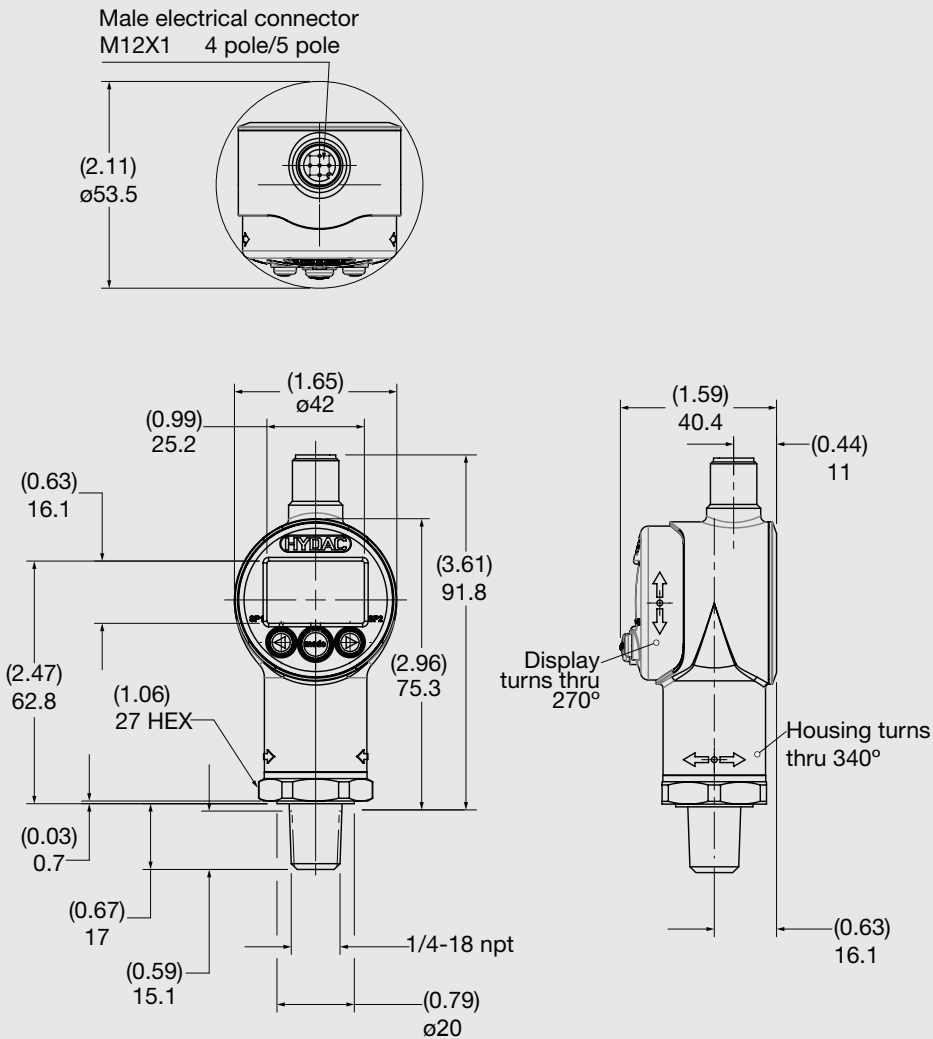
1 = Stainless steel

## Accessories:

Appropriate accessories, such as electrical connectors, mechanical adapters, splash guards, clamps for wall-mounting etc can be found in the Accessories brochure.



## Dimensions:

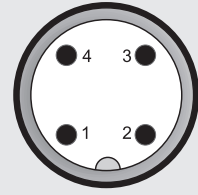


## Note:

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. For European mechanical connection and bar ranges see European Catalog

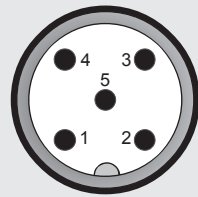
## Pin connections:

M12x1, 4 pole



Pin	EDS 31X6-1	EDS 31X6-2	EDS 31X6-3
1	+U <sub>B</sub>	+U <sub>B</sub>	+U <sub>B</sub>
2	n.c.	SP 2	Analog
3	0 V	0 V	0 V
4	SP 1	SP 1	SP 1

M12x1, 5 pole



Pin	EDS 31X8-5
1	+U <sub>B</sub>
2	Analog
3	0 V
4	SP 1
5	SP 2

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## Electronic Absolute Pressure Switch EDS 3100 with IO-Link Interface



### Description:

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

The instrument is equipped with a switching output and additional output that can be configured as switching or analog (4 .. 20 mA or 0 .. 10 V).

Compared with the standard version, the IO-Link interface enables bidirectional communication between the device and the control.

Parameterization and cyclical transmission of process and service data is therefore possible.

The pressure switch series EDS 3100 with communication interface IO-Link according to specification V1.1 has been specially designed for connecting sensors in automation systems.

Typical fields of application are machine tools, handling and assembly automation, intralogistics or the packaging industry.

### Special features:

- IO Link Interface
- 1 PNP transistor switching output
- Additional signal output, can be configured as PNP transistor switching output or analog output
- Accuracy  $\leq \pm 0.5\%$  FS B.F.S.L.
- 4-digit digital display
- Can be rotated in two axes for optimal alignment

### Technical data:

Input data	
Measuring ranges	15, 50 psia
Overload pressures	45, 150 psia
Burst pressures	70, 250 psia
Mechanical connection	1/4-18 NPT (male)
Torque value	30lb-ft (40 Nm)
Parts in contact with medium	Mech. connection: Stainless steel Sensor cell: Ceramic Seal: FPM / EPDM (as per model code)
Output data	
Output signals	Output 1: PNP transistor switching output Output 2: can be configured as PNP transistor switching output or analog output
Accuracy to DIN 16086	$\leq \pm 0.5\%$ FS typ.
Max. setting (display, analog output)	$\leq \pm 1\%$ FS max.
Repeatability	$\leq \pm 0.25\%$ FS max.
Temperature drift	$\leq \pm 0.014\%$ /°F max zero point $\leq \pm 0.014\%$ /°F max. range
Analog output	
Signal	selectable: 4 .. 20 mA load resistance max. 500 $\Omega$ 0 .. 10 V load resistance min. 1 k $\Omega$
Switch outputs	
Type	PNP transistor switching output
Switching current	max. 250 mA per output
Switching cycles	> 100 million
Reaction time	< 10 ms
Long term drift	$\leq \pm 0.3\%$ FS typ. / year
Parameterization	
	<b>Via IO-Link interface, with HYDAC programming device HPG 3000 or push buttons on the EDS 3100</b>
Environmental conditions	
Compensated temperature range	14 .. +158 °F
Operating temperature range	-13 .. +176 °F
Storage temperature range	-40 .. +176 °F
Fluid temperature range	-13 .. +176 °F
CE-mark	EN 61000-6-1 / 2 / 3 / 4
Vibration resistance according to DIN EN 60068-2-6 (0 .. 500 Hz)	$\leq 10$ g
Shock resistance according to DIN EN 60068-2-29 (11 ms)	$\leq 50$ g
Protection class to IEC 60259	IP 67
Other data	
Supply voltage	9 .. 35 V DC without analog output 18 .. 35 V DC with analog output
Current consumption	$\leq 0.535$ A with active switching outputs $\leq 35$ mA with inactive switching outputs $\leq 55$ mA with inactive switching output and analog output
Display	4-digit, LED, 7-segment, red, height of digits 7 mm
Weight	~ 120 g

Note: Excess voltage, override protection and short circuit protection are provided.  
FS (Full Scale) = relative to complete measuring range

## Setting options:

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

## Setting ranges for the switch outputs:

Measuring range in psi	Lower limit of RP / FL in psi	Upper limit of SP / FH in psi
0..15	0.15	15
0..50	0.5	50

Measuring range in psi	Min. difference betw. RP and SP & FL and FH	Increment*
0..15	0.15	0.05
0..50	0.5	0.1

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

SP = switch point

RP = switch-back point

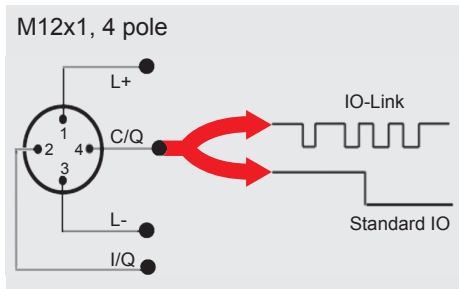
FL = pressure window lower value

FH = pressure window upper value

## Additional functions:

- Switching mode of the switching outputs adjustable (switching 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
- Analog output signal selectable: 4 .. 20 mA or 0 .. 10 V
- Pressure can be displayed in bar, psi, MPa.

## Pin connections:



Pin	Signal	Description
1	L+	Supply voltage
2	I/Q	Switching output (SP2) / analog output
3	L-	Gnd
4	C/Q	IO-Link communication / switching output (SP1)

## IO-Link-specific data:

Baud rate	38.4 kBaud *
Cycle time	2.5 ms
Process data width	16 Bit
Frame type	2.2
Specification	V1.1

\* Connection with unshielded standard sensor line possible up to a max. line length of 20 m.

Download the IO Device Description (IODD) from:

<http://www.hydac.com/de-en/service/downloads-software-on-request/>

## Model code:

EDS 3 1 X 6 - F31 - XXXX - 400 - X 1

### Mechanical connection

8 = 1/4-18 NPT (male)

### Electrical connection

6 = Male M12x1, 4 pole (connector not supplied)

### Output

F31 = IO Link Interface

### Pressure ranges in psia

0015, 0050

### Modification number

400 = Standard

### Seal material (in contact with fluid)

F = FPM seal (e.g. for hydraulic oils)

E = EPDM seal (e.g. for water, refrigerants)

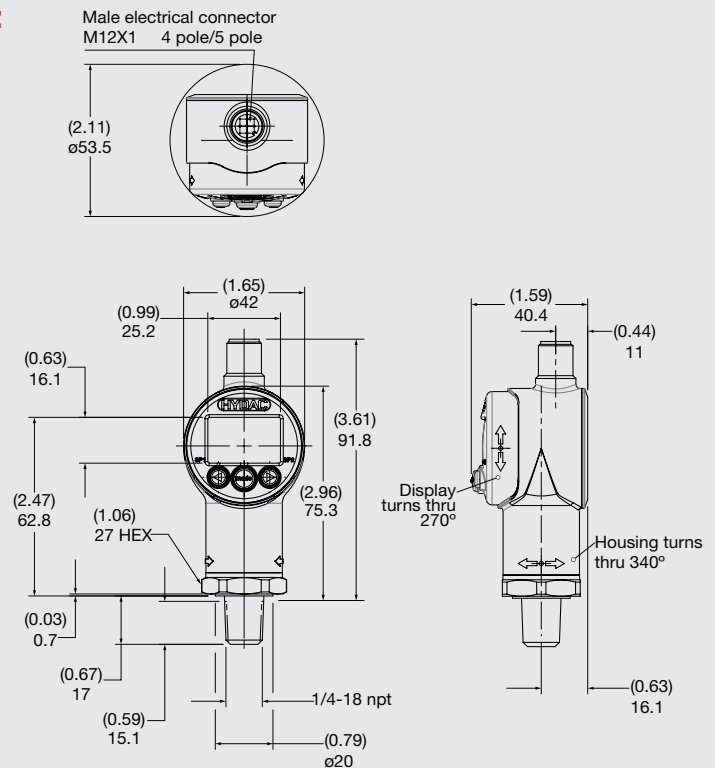
### Material of connection (in contact with fluid)

1 = Stainless steel

## Accessories:

Appropriate accessories, such as electrical connectors, mechanical adapters, splash guards, clamps for wall-mounting etc can be found in the Accessories brochure.

## Dimensions:



## Note:

The information in this brochure relates to the operating conditions and applications described.

For applications and operating conditions not described, please contact the relevant technical department.

Subject to technical modifications.

For European mechanical connection and bar ranges see European Catalog

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## Electronic Pressure Switch EDS 300

### Description:

The EDS 300 is a compact, electronic pressure switch with integral digital display. Four different output models are available: with one or two switching points and both models can also have an additional analog output signal 4 .. 20 mA.

The switching points and the associated hysteresis can be adjusted using the keypad. For optimum adaptation to a particular application, the instrument has many additional adjustment parameters, e.g. switching delay times, N/O / N/C function of the outputs.

The main applications of the EDS 300 are to indicate pressures and limits in hydraulics and pneumatics and anywhere high switching frequency or constant switching accuracy would overburden a mechanical pressure switch. The unit is ideal for building accumulator charging circuits or pump and compressor controls.

### Special features:

- Integrated pressure sensor with thin-film strain gauge on stainless steel membrane
- Compact, robust construction
- Accuracy  $\leq \pm 0.5\%$  FS B.F.S.L.
- 3-digit digital display
- Easy to operate thanks to key programming
- Switching points and switch-back hysteresis can be adjusted independently
- Window function
- Many useful additional functions

### Technical data:

Input data	
Measuring ranges	-14..75, 150, 1000, 3000, 6000, 9000 psi
Overload pressures	290, 290, 2900, 7250, 11600, 14500 psi
Burst pressures	1450, 1450, 7250, 14500, 29000, 29000 psi
Mechanical connection	7/16-20 UNF 2B (SAE 4 female)
Torque value	11lb-ft (15 Nm)
Parts in contact with medium	Mech. conn.: Stainless steel Seal: FPM
Output data	
Accuracy to DIN 16086, Max. setting (display, analog output)	$\leq \pm 0.5\%$ FS typ. $\leq \pm 1\%$ FS max.
Repeatability	$\leq \pm 0.5\%$ FS max.
Temperature drift	$\leq \pm 0.017\%$ / °F max. zero point $\leq \pm 0.017\%$ / °F max. range
Analog output (optional)	
Signal	4 .. 20 mA      load resistance $\leq 400 \Omega$
Switch outputs	
Type	PNP transistor output
Switching current	max. 1.2 A per switch output
Switching cycles	> 100 million
Reaction time	approx. 10 ms
Environmental conditions	
Compensation temperature range	14..+158°F
Operating temperature range	-13..+176°F
Storage temperature range	-40..+176°F
Fluid temperature range	-13..+176°F
CE mark	EN 61000-6-1 / 2 / 3 / 4
Vibration resistance to DIN EN 60068-2-6 at 10 .. 500 Hz	$\leq 10$ g
Shock resistance to DIN EN 60068-2-29 (11 ms)	$\leq 50$ g
Protection class to IEC 60529	IP 65
Other data	
Supply voltage	20 .. 32 V DC
Current consumption	approx. 100 mA (inactive switch output)
Display	3-digit, LED, 7 segment, red, height of digits 9.2 mm
Weight	~ 300 g

Note: Reverse polarity protection of the supply voltage, excess voltage, override and short circuit protection are provided.  
FS (Full Scale) = relative to complete measuring range

## Setting options:

All settings available on the EDS 300 are grouped in 2 easy-to-navigate menus. In order to prevent unauthorized adjustment of the device, a programming lock can be set.

## Setting ranges for the switch outputs:

### Switching point function

Meas. range in psi	Switch point in psi	Hysteresis in psi	Increment* in psi
-14.5..75	-12.5..75.0	-0.5..74.0	0.5
0..150	3..150	1..148	1
0..1000	15..1000	5..990	5
0..3000	45..3000	15..2970	20
0..6000	90..6000	30..5940	30
0..9000	150..9000	50..8900	50

### Window function

Meas. range in psi	Lower switch value in psi	Upper switch value in psi	Increment* in psi
-14.5..75	-13..74.5	-12.5..75.0	0.5
0..150	2..149	3..150	1
0..1000	10..995	15..1000	5
0..3000	40..2980	45..3000	20
0..6000	60..5970	90..6000	30
0..9000	100..8950	150..9000	50

\* 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 and switch-off delay adjustable from 0.0 .. 75.0 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
- Analog output signal selectable 4 .. 20 mA
- Subsequent correction of zero point in the range  $\pm 3\%$  FS possible

## Model code:

EDS 3 5 X - X - XXX - 400

### Mechanical connection

5 = 7/16-20 UNF 2B (SAE 4 female)

### Electrical connection

5 = Male 3 pole + PE, EN175301-803 (DIN 43650) only possible on output model "1" (connector supplied)

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

8 = Male M12x1, 5 pole only possible on output model "5" (connector not supplied)

### Output

1 = 1 switching output only in conjunction with electrical connection type "5" or "6"

2 = 2 switching outputs only in conjunction with electrical connection "6"

3 = 1 switching output and 1 analog output only in conjunction with electrical connection type "6"

5 = 2 switching outputs and 1 analog output only in conjunction with electrical connection type "8"

### Pressure ranges in psi

0089 (-14..75), 0150, 1000, 3000, 6000, 9000 psi

### Modification number

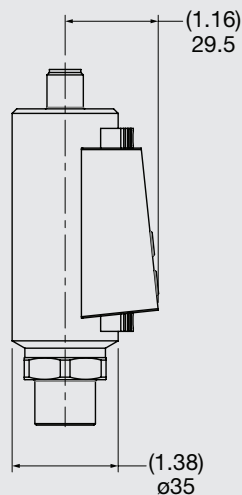
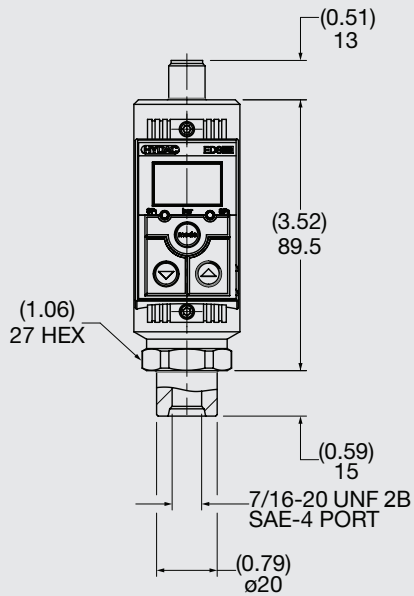
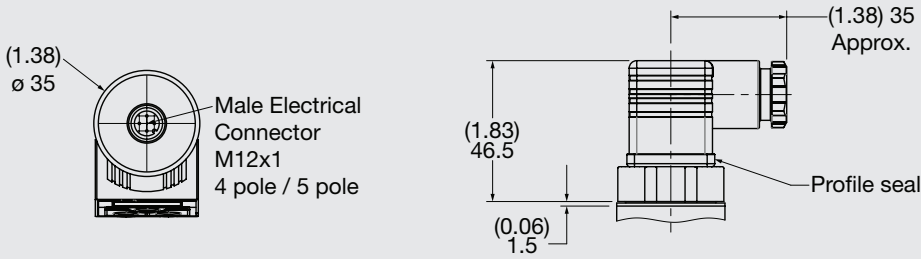
400 = standard in psi

401 = vacuum in psi

### Accessories:

Appropriate accessories, such as electrical connectors, mechanical adapters, splash guards, clamps for wall-mounting etc can be found in the Accessories brochure.

## Dimensions:



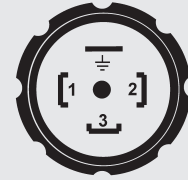
## Note:

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## Pin connections:

EN175301-803 (DIN 43650)



Pin EDS 355-1

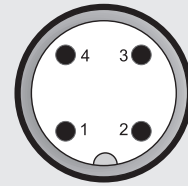
1 +U<sub>B</sub>

2 0 V

3 SP 1

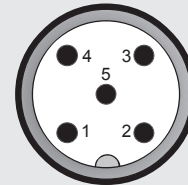
⊥ Housing

M12x1, 4 pole



Pin	EDS 356-1	EDS 356-2	EDS 356-3
1	+U <sub>B</sub>	+U <sub>B</sub>	+U <sub>B</sub>
2	n.c.	SP 2	Analog
3	0 V	0 V	0 V
4	SP 1	SP 1	SP 1

M12x1, 5 pole



Pin EDS 358-5

1 +U<sub>B</sub>

2 Analog

3 0 V

4 SP 1

5 SP 2







## Electronic Pressure Switch EDS 300 with Approvals for Shipping

### Description:

The EDS 300 is a compact, electronic pressure switch with digital display. The pressure measurement is based on a strain gauge sensor cell in stainless steel. All parts in contact with the medium are in stainless steel, and are welded together. Since no seals are required in the sensor interior, leakage is eliminated.

Two relay switch outputs with N/O function and an additional analog output signal (4 .. 20 mA) enable the pressure switch to be incorporated into modern controls.

The switch points and the corresponding hysteresis can easily be adjusted via the keypad.

For optimum adaptation to a particular application, the instrument has many additional setting parameters, e.g. switching direction of the relays or switching delay times.

Areas of application are pressure or limit monitoring on marine transmissions, diesel engines, pumps and general hydraulic and pneumatic systems.

### Approvals:



- American Bureau of Shipping



- Lloyds Register of Shipping



- Det Norske Veritas



- Germanischer Lloyd



- Bureau Veritas

- Other approvals on request

### Technical data:

#### Input data

Measuring ranges	-14 to 75, 150, 1000, 3000, 6000, 9000 psi
Overload pressures	290, 290, 2900, 7250, 11600, 14500 psi
Burst pressures	1450, 1450, 7250, 14500, 29000, 29000 psi
Mechanical connection	7/16-20 UNF 2B (SAE 4 female)
Torque value	11lb-ft (15 Nm)
Parts in contact with medium	Mech. conn.: Stainless steel Seal: FPM

#### Output data

Accuracy to DIN 16086, Max. setting (display, analog output)	≤ ± 0.5 % FS typ. ≤ ± 1 % FS max.
Repeatability	≤ ± 0.5 % FS max.
Temperature drift	≤ ± 0.017%/°F max. zero point ≤ ± 0.017%/°F max. range

#### Analog output

Signal	4 .. 20 mA	load resistance ≤ 400 Ω
--------	------------	-------------------------

#### Switch outputs

Type	relay contacts (N/O)
Switching voltage	max. 60 V AC / DC
Switching current	max. 1 A per switch output
Switching capacity	max. 30 W / 30 VA (for inductive load, use varistors)
Switching cycles	20 million at minimum load 0.5 million at maximum load
Reaction time	approx. 10 ms

#### Environmental conditions

Compensated temperature range	14..+158°F
Operating temperature range	-13..+176°F
Storage temperature range	-40..+176°F
Fluid temperature range	-13..+176°F
CE mark	EN 61000-6-1 / 2 / 3 / 4
Vibration resistance to DIN EN 60068-2-6 at 10 .. 500 Hz	5 .. 25 Hz: 3.2 mm 25 .. 500 Hz: 4 g
Shock resistance to DIN EN 60068-2-29 (1 ms)	≤ 50 g
Protection class to IEC 60529	IP 65

#### Other data

Supply voltage	20 .. 32 V DC
Current consumption	approx. 100 mA (inactive switch output)
Display	4-digit, LED, 7 segment, red, height of digits 9.2 mm
Weight	~ 300 g

Note: Reverse polarity protection of the supply voltage, excess voltage, override and short circuit protection are provided.  
FS (Full Scale) = relative to complete measuring range

## Setting options:

All settings available on the EDS 300 are grouped in 2 easy-to-navigate menus. In order to prevent unauthorized adjustment of the device, a programming lock can be set.

## Setting ranges for the switch outputs:

Switching point function

Meas. range in psi	Switch point in psi	Hysteresis in psi	Increment* in psi
-14.5..75	-12.5..75.0	-0.5 .. 74.0	0.5
0 .. 150	3 .. 150	1 .. 148	1
0 .. 1000	15 .. 1000	5 .. 990	5
0 .. 3000	45 .. 3000	15 .. 2970	15
0 .. 6000	90 .. 6000	30 .. 5940	30
0 .. 9000	150 .. 9000	50 .. 8900	50

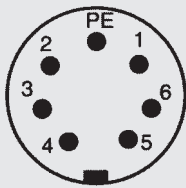
\* All ranges given in the table are adjustable by the increments shown.

## Additional functions:

- Scale of the display range adjustable (bar or psi)
- Switching direction of the relays adjustable (N/C or N/O function)
- Switch-on and switch-off delay adjustable from 0.0 .. 75.0 seconds
- Choice of display (actual pressure, peak value, switch point 1, switch point 2, display off)
- Subsequent correction of zero point in the range  $\pm 3\%$  FS possible

## Pin connections:

DIN 43651



Pin	EDS 347-4
1	+U <sub>B</sub>
2	Center relay 1 and 2
3	Relay contact 1 (SP 1)
4	0 V
5	Analog
6	Relay contact 2 (SP 2)
⊥	Housing

## Model code:

EDS 3 5 7 - 4 - XXX - SXX

### Mechanical connection

5 = 7/16-20 UNF 2B (SAE 4 female)

### Electrical connection

7 = Male 6 pole + PE, DIN 43651  
(connector ZBE 10 not supplied)

### Output

4 = 2 switch outputs and 1 analog output

### Pressure ranges in psi

0089 (-14 to 75), 0150, 1000, 3000, 6000, 9000

### Modification number

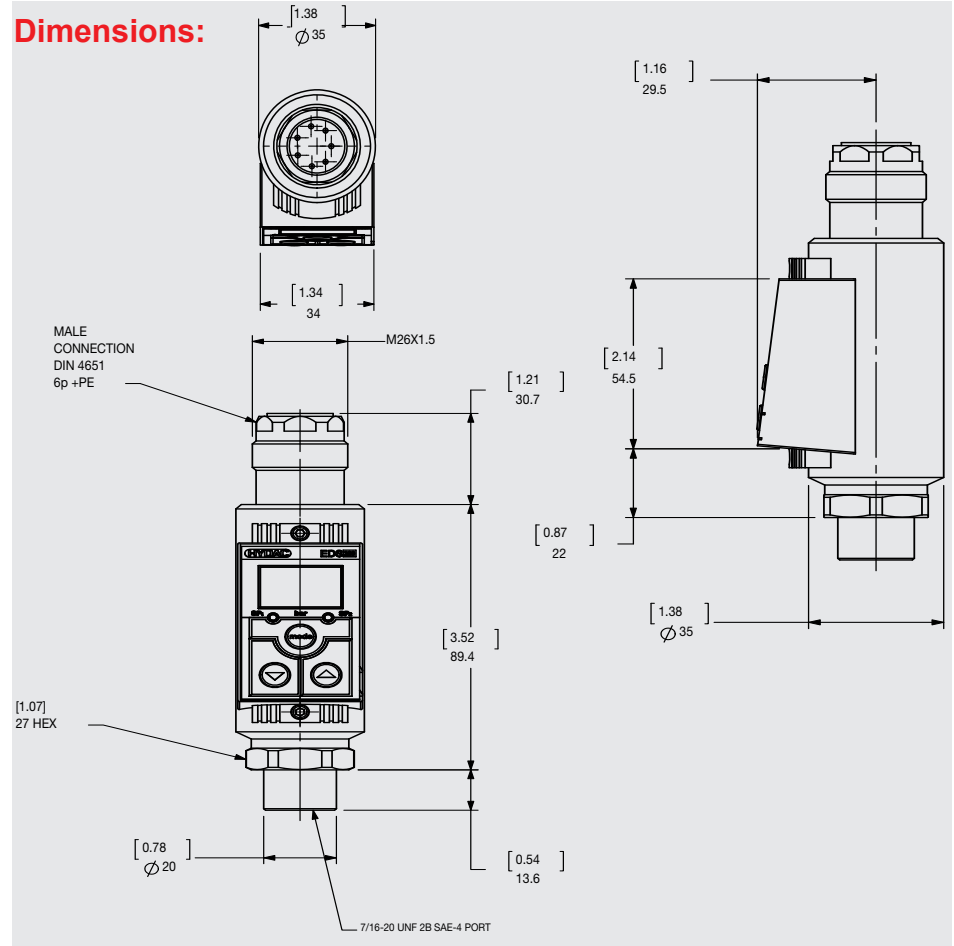
S40 = Standard in psi

S41 = Vacuum version (-14..75 psi)

### Accessories:

Appropriate accessories, such as electrical connectors, mechanical adapters, clamps for wall-mounting etc can be found in the Accessories brochure.

## Dimensions:



## Note:

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## Electronic Pressure Switch EDS 8000

### Description:

EDS 8000 is an electronic pressure switch in compact design which is simple to adjust.

Models with one or two transistor switch outputs (PNP) are available.

The switch points are set using the two keys and a four-digit display. During operation the switch position is indicated by either a red or a green backlight in the display.

For optimum adaptation to a particular application, the instrument has many additional adjustment parameters, e.g. switching delay times, N/O / N/C function of the outputs.

EDS 8000 is available in various pressure ranges between 0..500 psi and 0..9000 psi.

The main applications of the EDS 8000 are to indicate pressures and limits in hydraulics and pneumatics, or any application where high switching frequency or consistent switching accuracy would overburden a mechanical pressure switch.

### Special features:

- Menu navigation according to VDMA
- 2 PNP transistor switching outputs
- Robust stainless steel measurement cell
- Accuracy class  $\leq \pm 0.5\%$  FS B.F.S.L.
- 4-digit display
- Multi-color switch display
- Protection class IP 67
- Simple operation with key programming
- Many useful additional functions

### Technical data:

Input data		
Measurement range	500, 1000, 3000, 6000, 9000 psi	
Overload pressures	1160, 2900, 7250, 11600, 14500 psi	
Burst pressures	2900, 7250, 14500, 29000, 29000 psi	
Mechanical connection	9/16-18 UNF 2A (SAE 6 male)	
Torque value	15lb-ft (20Nm)	
Parts in contact with medium	Mech. conn.:	Stainless steel
	Sensor cell:	Thin-film strain gauge
	Seal:	FPM
Output data		
Accuracy to DIN 16086	$\leq \pm 0.5\%$ FS typ.	
Max. setting (display)	$\leq \pm 1\%$ FS max.	
Repeatability	$\leq \pm 0.5\%$ FS max.	
Temperature drift (environment)	$\leq \pm 0.017\%$ FS/°F max. zero point $\leq \pm 0.017\%$ FS/°F max. range	
Long-term stability	$\leq \pm 0.25\%$ FS / year max.	
Switch outputs		
Type	2 transistor switching outputs PNP	
Switching current	max. 250 mA per output	
Switching cycles	> 100 million	
Reaction time	< 10 ms	
Environmental conditions		
Compensated temperature range	-13..+185°F	
Ambient temperature range <sup>1)</sup>	-40..+212°F/-13..+212°F	
Storage temperature range	-40..+185°F	
Fluid temperature range <sup>1)</sup>	-40..+257°F/-13..+257°F	
Nominal temperature range of display (read-out)	5..158°F	
CE mark	EN 61000-6-1 / 2 / 3 / 4	
RoHS mark <sup>2)</sup>	Certificate No. E318391	
Vibration resistance to DIN EN 60068-2-6 (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 spec.	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 switch output)	
Display	4-digit, LED, 7 segment, height of digits 4.5 mm	
Life expectancy	> 10 million cycles (0 .. 100 %)	
Weight	~ 70 g	

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

FS (Full Scale) = relative to the complete measurement range

<sup>1)</sup> -13 °F with FPM seal, -40 °F on request

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

## Setting options:

All the terms and symbols used for setting the EDS 8000 as well as menu structure comply with the specifications of the German Engineering Federation Standard (VDMA 24574-1) for pressure switches. The EDS 8000 is easy and convenient to set up using the two buttons.

## Setting ranges for the switch outputs:

Meas. range in psi	Lower limit of RP / FL in psi	Upper limit of SP / FH in psi
0 .. 500	5	500
0 .. 1000	10	1000
0 .. 3000	30	3000
0 .. 6000	60	6000
0 .. 9000	90	9000

Meas. range in psi	Min. difference betw. RP & SP and FL & FH in psi	Increment* in psi
0 .. 500	5	1
0 .. 1000	10	2
0 .. 3000	30	5
0 .. 6000	60	10
0 .. 9000	90	20

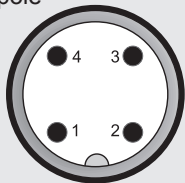
\* All ranges given in the table are adjustable by the increments shown.  
 SP = Switching point  
 RP = Switch-back point  
 FL = Pressure window lower value  
 FH = Pressure window upper value

## 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 and switch-off delay adjustable from 0.00 .. 99.99 seconds
- Display filter for smoothing the display value during pressure pulsations
- Pressure can be displayed in bar, psi, MPa

## Pin connections:

M12x1, 4 pole



Pin	EDS 8476-1	EDS 8476-2
1	+U <sub>B</sub>	+U <sub>B</sub>
2	n.c.	SP 2
3	0 V	0 V
4	SP 1	SP 1

## Model code:

EDS 8 4 7 6 - 2 - XXXX - 400

**Mechanical connection** \_\_\_\_\_  
 7 = 9/16-18 UNF 2A (SAE 6 male)

**Electrical connection** \_\_\_\_\_  
 6 = Male M12x1, 4 pole  
 (connector not supplied)

**Output** \_\_\_\_\_  
 2 = 2 switching outputs

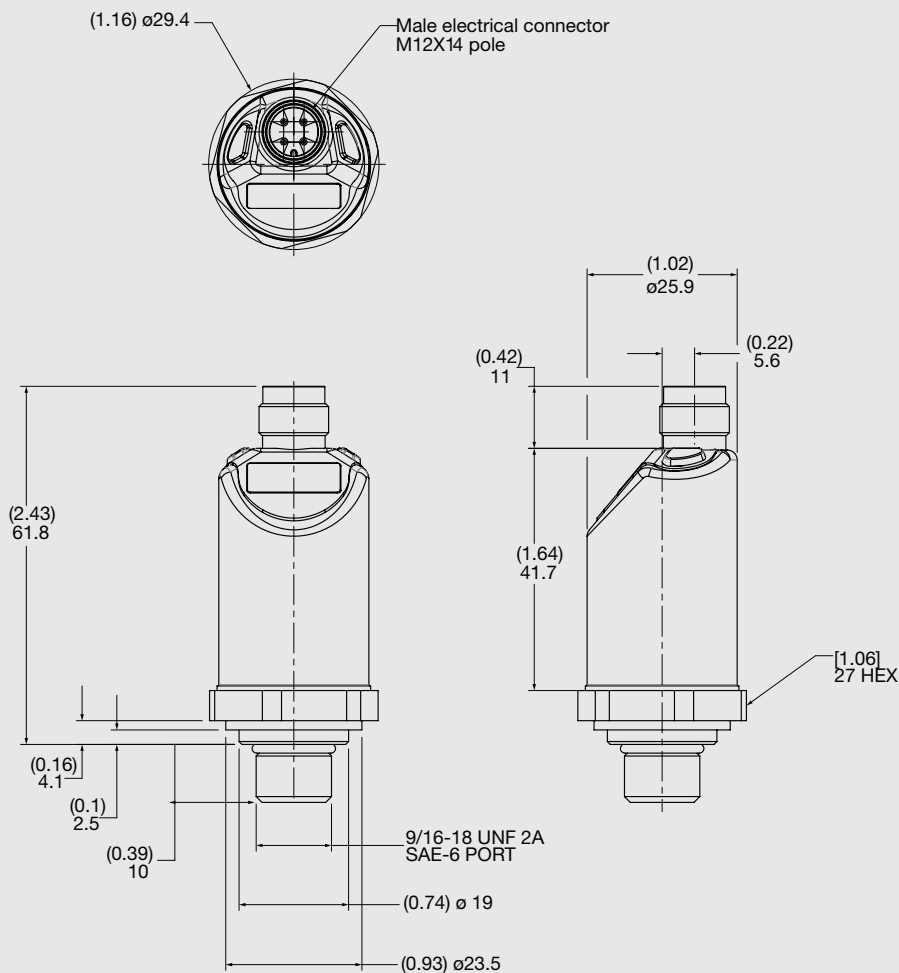
**Pressure ranges in psi** \_\_\_\_\_  
 0500, 1000, 3000, 6000, 9000

**Modification number** \_\_\_\_\_  
 400 = Standard in psi

## Accessories:

Appropriate accessories, such as electrical connectors, mechanical adapters, etc. can be found in the Accessories brochure.

## Dimensions:



## Note:

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## Electronic Pressure Switch EDS 601

### Description:

The EDS 601 is an electronic two-way pressure switch with display and analog output.

Its digitally adjustable switching points and switching hysteresis, make it ideally suited to applications which require frequent change-overs or accurate switch point setting.

The variety of setting parameters ensures versatility for use in all control and monitoring tasks in hydraulics, pneumatics, process control and general test and control technology.

### Special features:

- Two-channel pressure switch with change-over contacts
- Accuracy  $\leq \pm 0.5\%$  FS B.F.S.L
- 4-digit LED display
- Signal output 4 .. 20 mA or 0 .. 10 V selectable
- Can be installed as a pressure gauge or as a front panel mounted unit
- Digitally adjustable parameters
- Optional permanent display of the switching point or of the pressure peak value
- Can be set to display values in any unit of measurement e.g.: kN, kg, psi, ...

### Technical data:

Input data	
Measuring ranges	16, 40, 100, 250, 400, 600 bar
Overload pressures	24, 60, 200, 500, 800, 1000 bar
Burst pressures	200, 200, 500, 1000, 2000, 2000 bar
Mechanical connection	Threaded port G1/4 DIN 3852
Torque value	15 lb-ft (20Nm)
Parts in contact with medium	Mech. connection: Stainless steel
Output data	
Accuracy to DIN 16086, Max. setting (display, analog output)	$\leq \pm 0.5\%$ FS typ. $\leq \pm 1\%$ FS max.
Repeatability	$\leq \pm 0.5\%$ FS max.
Temperature drift	$\leq \pm 0.03\%$ FS/°F max. zero point $\leq \pm 0.03\%$ FS/°F max. range
Analog output (optional)	
Signal	selectable: 4 .. 20 mA      ohmic resistance $\leq 400 \Omega$ 0 .. 10 V      ohmic resistance $\geq 2 \text{ k}\Omega$
Switch outputs	
Type	2 relay outputs with change-over contacts
Switching voltage	max. 250 V
Switching current	max. 2 A per switch output
Switching capacity	max. 50 W / 400 VA
Switching cycles	10 million without load 1 million with load
Reaction time	approx. 10 ms including electronics
Environmental conditions	
Compensated temperature range	14..+158°F
Operating temperature range	-13..+158°F
Storage temperature range	-13..176°F
Fluid temperature range	-13..176°F
CE mark	EN 61000-6-1 / 2 / 3 / 4
Vibration resistance to DIN EN 60068-2-6 (0 .. 500 Hz)	$\leq 25 \text{ g}$
Shock resistance to DIN EN 60068-2-29 (1 ms)	$\leq 100 \text{ g}$
Protection class to IEC 60529	IP 65
Other data	
Supply voltage	20 .. 32 V DC
Current consumption	approx. 120 mA
Switch-on current	approx. 1.5 A (100 ms)
Display	4-digit, LED, 7 segment, red, height of digits 13 mm
Connection supply voltage / analog output	EN175301-803 (DIN 43650) / ISO 4400 (3 pole + PE)
Connection relay outputs	DIN 43651 (6 pole + PE)
Housing material	aluminium, anodized
Weight	~ 300 g

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

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

## Setting options:

The EDS 601 combines a multitude of functions with easy operation so that frequently-used parameters can be changed quickly.

### Switch point settings:

- Switching point relay 1 and 2 (1 % .. 100 % FS)
- Switching hysteresis 1 and 2 (0.5 % .. 99 % FS)

### Basic settings:

- Switching direction relay 1 and 2 (pull-in/release)
- Switching delay relay 1 and 2 (0.00 .. 90 seconds)
- Switch-off delay relay 1 and 2 (0.00 .. 90 seconds)
- Primary display (pressure / switch point / peak value)
- Display filter (slow / medium / fast)
- Output signal (current / voltage)

### Measuring range setting:

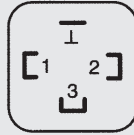
- Number of decimal places (0 .. 3; 4 digits in total)
- Lower measuring range limit (-995 .. 9995)
- Upper measuring range limit (-995 .. 9995)

### Calibration options:

- Zero point of internal sensor
- Final value of internal sensor
- Zero point voltage output (approx. 0 .. 3 V)
- Final value voltage output (approx. 3.5 .. 10 V)
- Zero point current output (approx. 0 .. 7 mA)
- Final value current output (approx. 7.5 .. 24 mA)

## Pin connections:

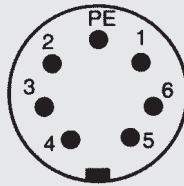
EN175301-803 (DIN 43650)  
(voltage supply / analog output)



Pin

1	+U <sub>B</sub>
2	0 V
3	Analog
⊥	Housing

DIN 43651 (relay outputs)



Pin

1	Relay 1 N/C
2	Relay 1 N/O
3	Center relay 1
4	Relay 2 N/C
5	Relay 2 N/O
6	Center relay 2
PE	Housing

## Model code:

EDS 6 0 1 - XXX - 000

Pressure ranges in bar

016, 040, 100, 250, 400, 600

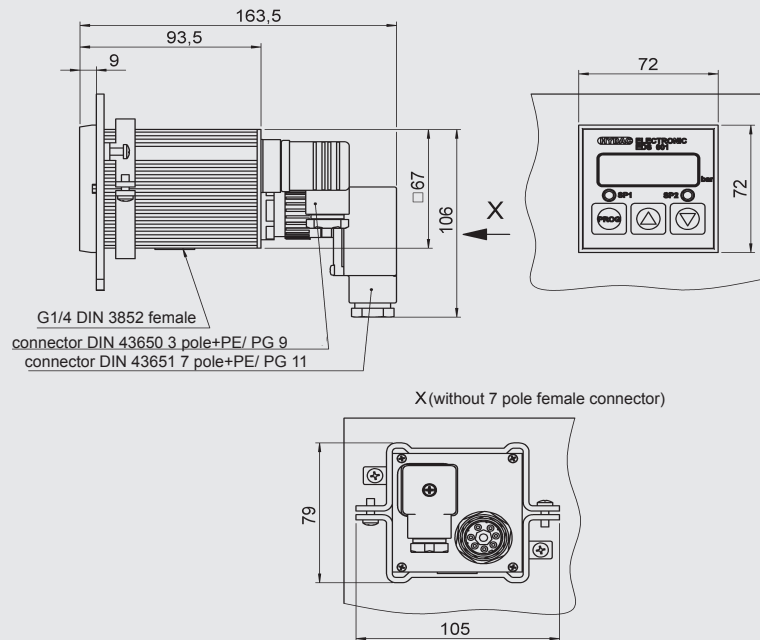
Modification number

000 = Standard

### Accessories:

Female electrical connectors EN175301-803 (DIN 43650) and DIN 43651 are supplied with the unit. Additional accessories, such as mechanical adapters, installation kits, etc. can be found in the Accessories brochure.

## Dimensions:



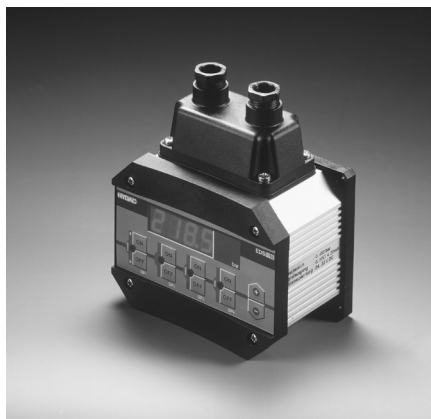
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## Electronic Pressure Switch EDS 1700

### Description:

With its integrated pressure measurement cell, 4-digit display and 4 switching outputs, the EDS 1700 offers the user all the advantages of a modern electronic pressure switch. 4 switching points and switch-back points can be adjusted very simply and independently of one another using the keypad.

For optimum integration in monitoring systems (e.g. with PLC), an analog output (4 .. 20 mA or 0 .. 10V) is also available.

The main areas of application of the EDS 1700 are in hydraulics and pneumatics. The instrument is ideal for use where frequent switching cycles (several million), stable switching point accuracy or simple and precise adjustability are required.

### Special features:

- Integrated pressure sensor with strain gauge on stainless steel membrane
- Accuracy 0.25% or 0.5% FS B.F.S.L
- 4-digit digital display
- Simple operation via key programming
- 4 limit relays, switching points and switch back points can be adjusted independently
- Analog output signal selectable
- Many useful additional functions
- Optional mounting position (pressure connection on the top/ bottom, keypad and display can be turned through 180°)
- Can be set to display values in any unit of measurement e.g.: kN, kg, psi, ...

### Technical data:

Input data	
Measuring ranges	232, 580, 1450, 3625, 5800, 8700 psi
Overload pressures	464, 1160, 2900, 7250, 11600, 14500 psi
Burst pressures	2900, 2900, 7250, 14500, 29000, 29000 psi
Mechanical connection	Threaded port G1/4 DIN 3852
Torque value	15 lb-ft (20Nm)
Parts in contact with medium	Mech. connection: Stainless steel
Output data	
Accuracy at min. setting (B.F.S.L.)	EDS 1700-P: $\leq \pm 0.25\%$ FS B.F.S.L. EDS 1700-N: $\leq \pm 0.5\%$ FS B.F.S.L.
Repeatability	EDS 1700-P: $\leq \pm 0.25\%$ FS max. EDS 1700-N: $\leq \pm 0.5\%$ FS max.
Temperature drift EDS 1700-P	$\leq \pm 0.012\%$ FS°F max. zero point & range
Temperature drift EDS 1700-N	$\leq \pm 0.017\%$ FS°F max. zero point & range
Analog output	
Signal (selectable)	4 .. 20 mA      ohmic resistance $\leq 400\Omega$ 0 .. 10 V      ohmic resistance $\geq 2\text{ k}\Omega$
Switch outputs	
Type	4 relays with change-over contacts (2 groups, common supply of each group connected)
Switching voltage	0.1 .. 250 V AC / DC
Switching current	0.009 .. 2 A per switch output
Switching capacity	max. 50 W / 400 VA (for inductive load, use varistors)
Switching cycles	20 million at minimum load 1 million at maximum load
Reaction time	approx. 20 ms
Environmental conditions	
Compensated temperature range	14..+158°F
Operating temperature range	-13..+158°F
Storage temperature range	-13..176°F
Fluid temperature range	-13..176°F
CE mark	EN 61000-6-1 / 2 / 3 / 4
Vibration resistance to DIN EN 60068-2-6 (0 .. 500 Hz)	$\leq 5\text{ g}$
Shock resistance to DIN EN 60068-2-29 (1 ms)	$\leq 10\text{ g}$
Protection class to IEC 60529	IP 65
Other data	
Supply voltage	22 .. 32 V DC
Current consumption	approx. 200 mA
Residual ripple of supply voltage	$\leq 10\%$
Display	4-digit, LED, 7 segment, red, height of digits 13 mm
Electrical connection	14-pole, terminal block
Housing material	aluminium, anodized
Weight	~ 800 g

Note: Reverse polarity protection of the supply voltage, excess voltage, override and short circuit protection are provided.  
FS (Full Scale) = relative to complete measuring range

## Setting options:

The core of the unit is a microprocessor which provides many useful extra functions in addition to normal pressure switch operation. It is possible, for example, to activate switching delay times to prevent fast pressure peaks from triggering an unwanted switching cycle. All settings are made using the keypad.

## Setting ranges of the switching points:

- Switching point relay 1 to 4:  
1.5 % .. 100 % FS
- Switch-back relay 1 to 4:  
1 % .. 99 % FS  
or alternatively  
switch-back hysteresis 1 to 4:  
1 % .. 99 % FS

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

## Additional setting options:

- Switching direction of the relays 1 to 4 (N/C or N/O)
- Switch-on delay relays 1 to 4 in the range 0.00 .. 90 seconds
- Switch-off delay relays 1 to 4 in the range 0.00 .. 90 seconds
- Switch-back mode (either switch-back point or switch-back hysteresis)
- Display of the actual pressure, a switching point or of the peak value
- Display filter (slow / medium / fast)
- Display range scale individually adaptable (bar, psi, user-selectable)
- Measurement unit (bar, psi) is displayed
- Analog output (4 .. 20 mA or 0 .. 10 V)
- Programming disable

## Terminal assignment:

Pin	
1	+U <sub>B</sub>
2	0 V
3	Analog output Signal +
4	Analog output Signal - (0 V)
5	Relay 1 N/C
6	Relay 1 N/O
7	Center relay 1 and 2
8	Relay 2 N/C
9	Relay 2 N/O
10	Relay 3 N/C
11	Relay 3 N/O
12	Center relay 3 and 4
13	Relay 4 N/C
14	Relay 4 N/O

## Model code:

EDS 1 7 9 X - X - XXX - 000

### Mechanical connection

9 = Threaded port G1/4 DIN 3852

### Display

1 = 4-digit bar  
2 = 4-digit psi

### Accuracy

P = 0.5 %  
N = 1 %

### Pressure ranges in bar

016(232 psi), 040(580 psi), 100(1450 psi), 250(3625 psi),  
400(5800 psi), 600(8700 psi)

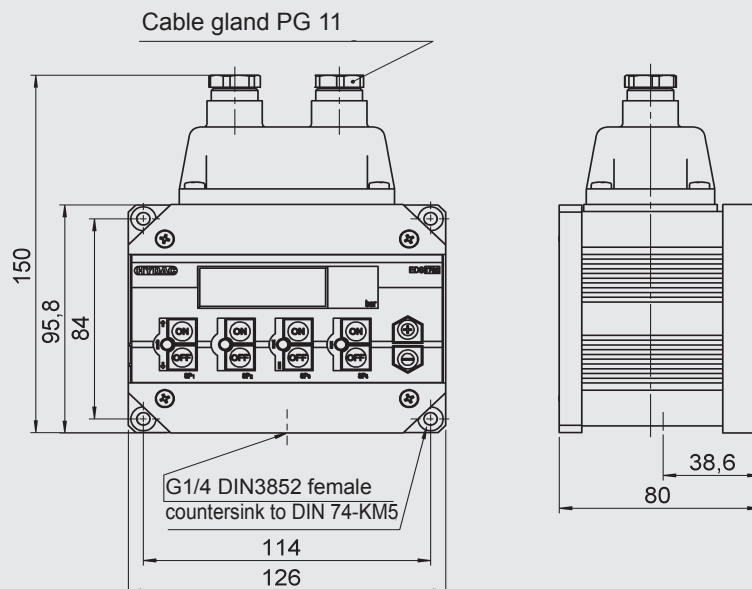
### Modification number

000 = Standard

### Accessories:

Appropriate accessories, such as mechanical adapters etc. can be found in the Accessories brochure.

## Dimensions:



## Note:

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## Electronic Pressure Switch EDS 4400 Programmable

### Description:

The programmable electronic pressure switch in the series EDS 4400 has been specially developed to combine the advantages of a compact, robust and cost-effective device with the benefits of a programmable pressure switch.

The EDS 4400 can be easily programmed using the HPG 3000 programming unit. Once the programming unit is disconnected from the EDS 4400, the pressure switch retains all the settings. This prevents unauthorized or incorrect adjustment of the settings.

The following parameters can be changed:

- Switching point
- Hysteresis
- Switching direction (N/O / N/C)
- Switching delay times

The EDS 4400 is suitable for high-pressure applications (starting at 1000 psi) and has a pressure measurement cell with thin-film strain gauge on a stainless steel membrane. In contrast to pressure switches which are factory-set according to customer requirements and are not field-adjustable, the programmable EDS 4400 is highly versatile and replaces a wide range of models. This is advantageous in respect of stock management.

### Special features:

- Option of 1 or 2 switching outputs
- Option of PNP or NPN switching outputs
- High switching output capacity
- Accuracy  $\leq \pm 0.5\%$  FS B.F.S.L.
- Flexible user-programming
- Compact and robust design
- Also available in ATEX version for potentially explosive locations

### Technical data:

Input data	
Measuring ranges	1000, 3000, 6000, 9000 psi
Overload pressures	2900, 7250, 11600, 14500 psi
Burst pressures	7250, 14500, 29000, 29000 psi
Mechanical connection	9/16-18 UNF 2A (SAE 6 male)
Torque value	15lb-ft (20 Nm)
Parts in contact with medium	Mech. conn.: Stainless steel Seal: FPM
Output data	
Accuracy to DIN 16086, Max. setting	$\leq \pm 0.5\%$ FS typ. $\leq \pm 1\%$ FS max.
Repeatability	$\leq \pm 0.1\%$ FS max.
Temperature drift	$\leq \pm 0.017\%$ /°F max. zero point $\leq \pm 0.017\%$ /°F max. range
Switch output	1 or 2 transistor switch outputs PNP or NPN N/C or N/O
Output load	PNP: max. 1.2 A with 1 switching output max. 1 A each with 2 switching outputs NPN: max. 0.5 A with 1 switching output max. 0.3 A each with 2 switching outputs
Switching points / Hysteresis	user-programmable with HYDAC Programming Unit HPG 3000
Rising switch point and falling switch point delay	8 ms to 2000 ms; User-programmable with HYDAC Programming Unit HPG 3000
Long-term drift	$\leq \pm 0.3\%$ FS typ. / year
Environmental conditions	
Compensated temperature range	-13..+185°F
Operating temperature range	-13..+185°F
Storage temperature range	-40..+212°F
Fluid temperature range <sup>1)</sup>	-40..+212°F/-13..+212°F
CE mark	EN 61000-6-1 / 2 / 3 / 4
us mark <sup>2)</sup>	Certificate No. E318391
Vibration resistance to DIN EN 60068-2-6 at 10 .. 500 Hz	$\leq 20$ g
Shock resistance to DIN EN 60068-2-29 (1 ms)	$\leq 100$ g
Protection class to IEC 60529	IP 67 (M12x1, when an IP 67 connector is used)
Other data	
Supply voltage for use acc. to UL spec.	8 .. 32 V DC - limited energy - according to 9.3 UL 61010; Class 2; UL 1310/1585; LPS UL 60950
Current consumption	$\leq 25$ mA with inactive switching outputs $\leq 1.225$ A with 1 switching output $\leq 2.025$ A with 2 switching outputs
Residual ripple of supply voltage	$\leq 5\%$
Life expectancy	> 10 million cycles, 0 .. 100 % FS
Weight	~ 145 g

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

FS (Full Scale) = relative to the complete measurement range

<sup>1)</sup>-13 °F with FPM seal, -40 °F on request

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

## Setting options:

In conjunction with the HYDAC Programming Unit HPG 3000, all the settings are combined in an easy-to-follow menu.

## Setting ranges for the switch outputs:

Measuring range in psi	Increment in psi
0 .. 1000	2
0 .. 3000	5
0 .. 6000	10
0 .. 9000	20

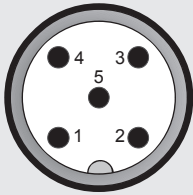
The switch point (upper switch value) on all instruments is between 5 % and 100 % of the measuring range and the switch-back point (lower switch value) is between 1 % and 96 % of the measuring range.

	Minimum value in ms	Maximum value in ms
Switch-on delay Ton1/Ton2	8	2040
Switch-off delay ToF1/ToF2	8	2040

The increment for all instruments is 8 ms.

## Pin connections:

M12x1, 5 pole



Pin	Process connection	HPG connection
1	+U <sub>B</sub>	+U <sub>B</sub>
2	Out 2	n.c.
3	0 V	0 V
4	Out 1	n.c.
5	n.c.	Comport

## Model code:

EDS 4 4 7 8 - XXXX - X - P X - 000 (PSI)

### Mechanical connection

7 = 9/16-18 UNF 2A (SAE 6 male)

### Electrical connection

8 = Male M12x1, 5 pole

### Pressure ranges in psi

1000, 3000, 6000, 9000

### Number of switching outputs

1 = 1 switching output

2 = 2 switching outputs

### Output technology

P = Programmable switching output

### Output technology 2

P = PNP switching output

N = NPN switching output

### Modification number

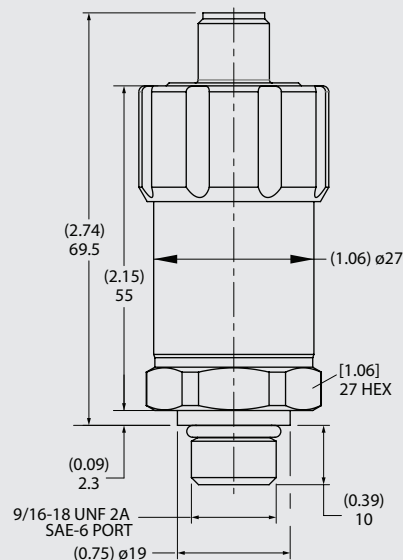
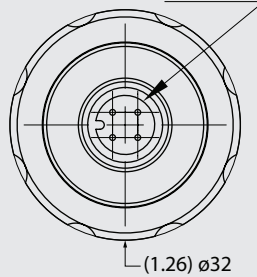
000 = Standard

### Accessories:

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

## Dimensions:

MALE ELECTRICAL CONNECTOR  
5 POLE  
M12X1



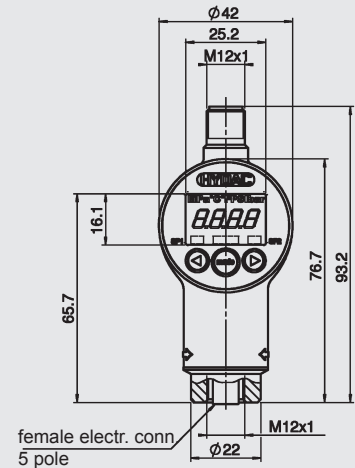
## Programming Unit:

(must be ordered separately)

### HPG 3000 - 000

Portable Programming Unit  
Part. No. 909422

HPG 3000 Power Supply  
with connector:  
Part #02091103



## Note:

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Subject to technical modifications.

For European mechanical connection and bar ranges see European Catalog.

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## Electronic Pressure Switch EDS 4300 Programmable

### Description:

The programmable electronic pressure switch in the series EDS 4300 was specially developed to combine the advantages of a compact, robust and cost-effective instrument with the benefits of a programmable pressure switch.

The EDS 4300 can be easily programmed using the HPG 3000 programming unit. Once the programming unit is disconnected from the EDS 4300, the pressure switch retains all the settings. This prevents unauthorized or incorrect adjustment of the settings.

The following parameters can be changed:

- Switching point
- Hysteresis
- Switching direction (N/O / N/C)
- Switching delay times

The EDS 4300 is suitable for low pressure applications (up to 500 psi) and has a pressure measurement cell with thick-film strain gauge on a ceramic membrane.

In contrast to pressure switches which are factory-set according to customer requirements and not field-adjustable, the programmable EDS 4300 is highly versatile and replaces a wide range of models. This is advantageous in respect of stock management.

### Special features:

- Option of 1 or 2 switching outputs
- Option of PNP or NPN switching outputs
- High switching output capacity
- Accuracy  $\leq \pm 0.5\%$  FS B.F.S.L.
- Flexible user-programming
- Compact and robust design
- Also available in ATEX version for potentially explosive locations

### Technical data:

Input data	
Measuring ranges	15, 50, 100, 250, 500 psi
Overload pressures	45, 150, 290, 725, 1500 psi
Burst pressures	70, 250, 400, 1000, 2500 psi
Mechanical connection	1/4-18 NPT (male)
Torque value	15lb-ft (20 Nm)
Parts in contact with medium	Mech. connection: Stainless steel Sensor cell: Ceramic Seal: FPM / EPDM (as per model code)
Output data	
Accuracy to DIN 16086,	$\leq \pm 0.5\%$ FS typ.
Max. setting	$\leq \pm 1\%$ FS max.
Repeatability	$\leq \pm 0.1\%$ FS max.
Temperature drift	$\leq \pm 0.017\%$ /°F max. zero point $\leq \pm 0.017\%$ /°F max. range
Switch output	1 or 2 transistor switch outputs PNP or NPN N/C or N/O
Output load	PNP: max. 1.2 A with 1 switching output max. 1 A each with 2 switching outputs NPN: max. 0.5 A on version with 1 switching output max. 0.3 A each on version with 2 switching outputs
Switching points / Hysteresis	user-programmable with HYDAC Programming Unit HPG 3000
Rising switch point and falling switch point delay	8 ms to 2000 ms; Freely programmable with HYDAC Programming Unit HPG 3000
Long-term drift	$\leq \pm 0.3\%$ FS typ. / year
Environmental conditions	
Compensated temperature range	-13..+185°F
Operating temperature range	-13..+185°F
Storage temperature range	-40..+212°F
Fluid temperature range <sup>1)</sup>	-40..+212°F/-13..+212°F
CE mark	EN 61000-6-1 / 2 / 3 / 4
UL mark <sup>2)</sup>	Certificate No. E318391
Vibration resistance to DIN EN 60068-2-6 at 10 .. 500 Hz	$\leq 20$ g
Shock resistance to DIN EN 60068-2-29 (1 ms)	$\leq 100$ g
Protection class to IEC 60529	IP 67 (M12x1, when an IP 67 connector is used)
Other data	
Supply voltage for use acc. to UL spec.	8 .. 32 V DC - limited energy - according to 9.3 UL 61010; Class 2; UL 1310/1585; LPS UL 60950
Current consumption	$\leq 25$ mA with inactive switching outputs $\leq 1.225$ A with 1 switching output $\leq 2.025$ A with 2 switching outputs
Residual ripple of supply voltage	$\leq 5\%$
Life expectancy	> 10 million cycles, 0 .. 100 % FS
Weight	~ 145 g

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

FS (Full Scale) = relative to the complete measurement range

<sup>1)</sup> -13 °F with FPM or EPDM seal, -40 °F on request

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

## Setting options:

In conjunction with the HYDAC Programming Unit HPG 3000, all the settings are combined in an easy-to-follow menu.

## Setting ranges for the switch outputs:

Measuring range in psi	Increment in psi
0 .. 15	0.05
0 .. 50	0.05
0 .. 100	0.2
0 .. 250	0.5
0 .. 500	1

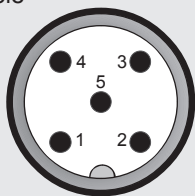
The switch point (upper switch value) on all instruments is between 5 % and 100 % of the measuring range and the switch-back point (lower switch value) is between 1 % and 96 % of the measuring range.

	Minimum value in ms	Maximum value in ms
Switch-on delay Ton1/Ton2	8	2040
Switch-off delay ToF1/ToF2	8	2040

The increment for all instruments is 8 ms.

## Pin connections:

M12x1, 5 pole



Pin	Process connection	HPG connection
1	+UB	+UB
2	Out 2	n.c.
3	0 V	0 V
4	Out 1	n.c.
5	n.c.	Comport

## Model code:

EDS 4 3 8 8 - XXXX - X - P X - 000 - X 1 (PSI)

### Mechanical connection

8 = 1/4-18 NPT (male)

### Electrical connection

8 = Male M12x1, 5 pole

### Pressure ranges in psi

0015, 0050, 0100,

0250, 0500

### Number of switching outputs

1 = 1 switching output

2 = 2 switching outputs

### Output technology

P = Programmable switching output

### Output technology 2

P = PNP switching output

N = NPN switching output

### Modification number

000 = Standard

### Seal material (in contact with fluid)

F = FPM seal (e.g.: for hydraulic oils)

E = EPDM seal (e.g.: for water or refrigerants)

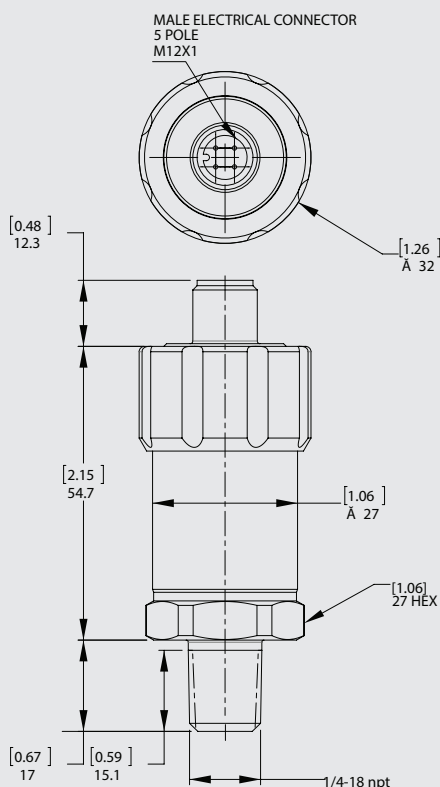
### Material of connection (in contact with fluid)

1 = Stainless steel

### Accessories:

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

## Dimensions:

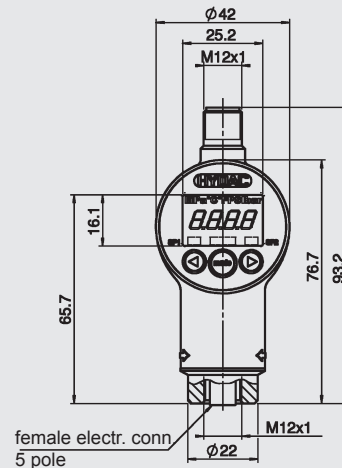


## Programming Unit:

(must be ordered separately)

### HPG 3000 - 000

Portable Programming Unit  
Part #909422



### HPG 3000 Power Supply with connector:

Part #02091103

## Note:

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## Electronic Pressure Switch EDS 820 with IO-Link Interface



### Description:

EDS 820 with IO-Link communication interface is a compact electronic pressure switch for relative pressure measurement in the high-pressure range.

The device has two PNP transistor switch outputs, one of which can serve as the IO communication output.

Compared with the standard version, the IO-Link interface enables bidirectional communication between the device and the control.

Parameterization and cyclical transmission of process and service data is therefore possible.

The pressure switch series EDS 820 with communication interface IO-Link according to specification V1.1 has been specially designed for connecting sensors in automation systems.

Typical fields of application are machine tools, handling and assembly automation, intralogistics or the packaging industry.

### Special features:

- IO-Link interface or PNP transistor switch output
- 1 additional PNP transistor switching output
- Accuracy  $\leq \pm 0.5$  FS B.F.S.L
- Highly robust sensor cell
- Status LED display for active switch outputs

### Technical data:

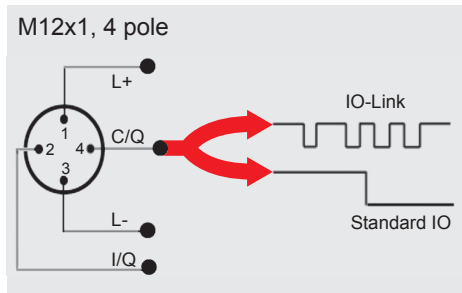
Input data	
Measuring ranges	500, 1000, 3000, 6000, 9000 psi
Overload range	1160, 2900, 7250, 11600, 14500 psi
Burst pressures	2900, 7250, 14500, 29000, 29000 psi
Mechanical connection	9/16-18 UNF 2A (SAE 6 male) with 0.5 mm orifice
Torque value	15lb-ft (20Nm)
Parts in contact with medium	Mech. connection: Stainless steel Seal: FPM
Output data	
Output signals	Pin 4: IO Link interface or user-configurable switching output Pin 2: user-configurable switching output
Accuracy to DIN 16086, Max. setting	$\leq \pm 0.5$ % FS typ. $\leq \pm 1.0$ % FS max.
Repeatability	$\leq \pm 0.1$ % FS max.
Temperature drift	$\leq \pm 0.017$ % FS $^{\circ}$ F max. zero point $\leq \pm 0.017$ % FS $^{\circ}$ F max. range
Switch outputs	
Type	PNP transistor output
Switching current	max. 250 mA per output
Switching cycles	> 100 million
Reaction time	< 10 ms
Long term drift	$\leq \pm 0.3$ % FS typ. / year
Parameterization	
	<b>Via IO-Link interface, with HYDAC programming device HPG 3000</b>
Environmental conditions	
Compensated temperature range	-13..+185 $^{\circ}$ F
Operating temperature range <sup>1)</sup>	-40..+185 $^{\circ}$ F / -13..+185 $^{\circ}$ F
Storage temperature range	-40..+212 $^{\circ}$ F
Fluid temperature range <sup>1)</sup>	-40..+257 $^{\circ}$ F / -13..+257 $^{\circ}$ F
CE - mark	EN 61000-6-1 / 2 / 3 / 4
Vibration resistance acc. to DIN EN 60068-2-6 at 0 .. 500 Hz	$\leq 25$ g
Shock resistance according to DIN EN 60068-2-29 (11 ms)	$\leq 50$ g
Protection class to IEC 60529	IP 67 (M12x1 male connection, for use with an IP 67 connector)
Other data	
Supply voltage	10 .. 32 V DC
Residual ripple of supply voltage	$\leq 5$ %
Current consumption	$\leq 25$ mA with inactive switching outputs $\leq 0.275$ A with 1 active switching output $\leq 0.525$ A with 2 active switching outputs
Weight	~ 65 g

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

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

<sup>1)</sup> -13  $^{\circ}$ F for EPM seal, -40  $^{\circ}$ F on request

## Pin connections:

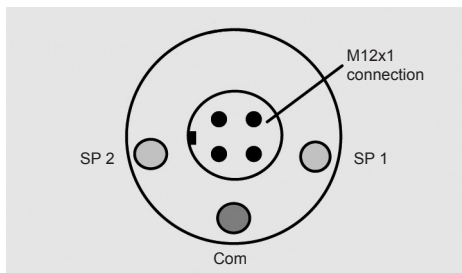


Pin	Signal	Description
1	L+	Supply voltage
2	I/Q	Switching output (SP2) / analog output
3	L-	Gnd
4	C/Q	IO-Link communication / switching output (SP1)

## Status LEDs:

The pressure switch has 3 status LEDs on the electrical connection:

2 LEDs (yellow) for the switching statuses of SP1 and SP2 and 1 LED (green) for the operating status



LED 1 (SP 1)	Yellow	Switching output 1 active (high)
LED 2 (SP 2)	Yellow	Switching output 2 active (high)
LED 3 (Com)	Green, permanent	Supply voltage OK
	Green, flashing	Supply voltage OK switch in IO-Link mode

## IO-Link-specific data:

Baud rate	38.4 kBaud *
Cycle time	2.5 ms
Process data width	16 Bit
Frame type	2.2
Specification	V1.1

\* Connection with unshielded standard sensor line possible up to a max. line length of 20 m.

Download the IO Device Description (IODD) from:

<http://www.hydac.com/de-en/service/downloads-software-on-request/>

## Model code:

EDS 8 2 7 - XXXXX - F31 - 000 (PSI)

### Mechanical connection

7 = 9/16-18 UNF 2A (SAE 6 male)

### Pressure ranges in psi

00500, 01000, 03000, 06000, 09000

### Output

F31 = IO Link Interface

### Modification number

000 = Standard

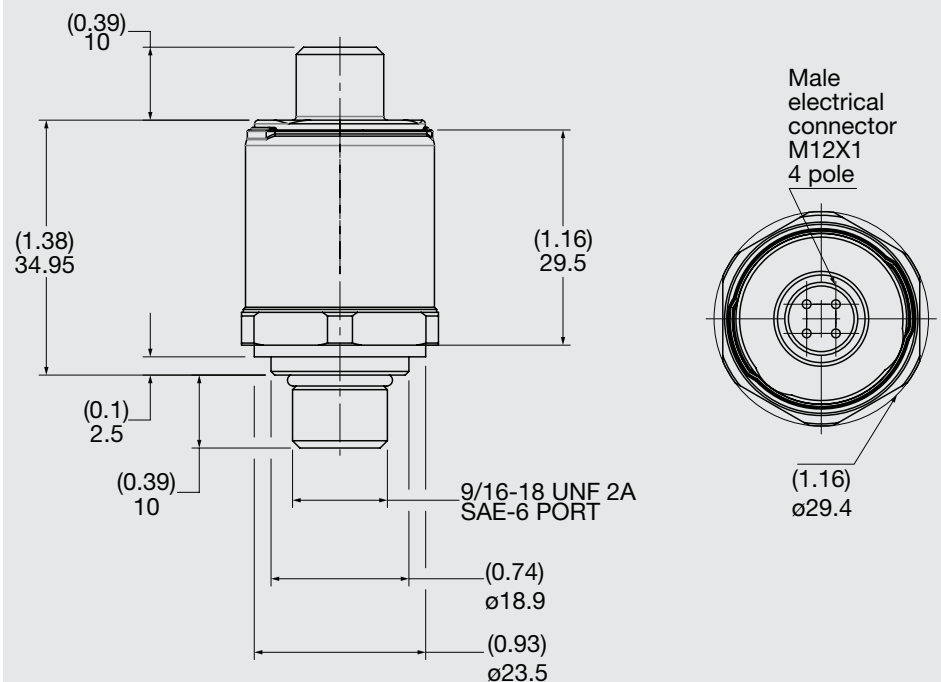
### Version

PSI = Pounds per square inch

## Accessories:

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

## Dimensions:



## Note:

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