Electronic Pressure Switches
## ELECTRONIC PRESSURE SWITCHES

Electronic pressure switches for general applications:

<table>
<thead>
<tr>
<th>Model</th>
<th>Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDS 3400</td>
<td></td>
</tr>
<tr>
<td>EDS 3400 IO-Link</td>
<td></td>
</tr>
<tr>
<td>EDS 3300</td>
<td></td>
</tr>
<tr>
<td>EDS 3300 IO-Link</td>
<td></td>
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<tr>
<td>EDS 3100</td>
<td></td>
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<tr>
<td>EDS 3100 IO-Link</td>
<td></td>
</tr>
<tr>
<td>EDS 300</td>
<td></td>
</tr>
<tr>
<td>EDS 300 Approvals for shipping</td>
<td></td>
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<tr>
<td>EDS 8000</td>
<td></td>
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<tr>
<td>EDS 601</td>
<td></td>
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<tr>
<td>EDS 1700</td>
<td></td>
</tr>
<tr>
<td>EDS 4400 Programmable</td>
<td></td>
</tr>
<tr>
<td>EDS 4300 Programmable</td>
<td></td>
</tr>
<tr>
<td>EDS 820 IO-Link</td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Feature</th>
<th>EDS 3400</th>
<th>EDS 3300</th>
<th>EDS 3100</th>
<th>EDS 8000</th>
<th>EDS 601</th>
<th>EDS 1700</th>
<th>EDS 4400</th>
<th>EDS 4300</th>
<th>EDS 820</th>
<th>EDS 810</th>
<th>EDS 710</th>
<th>EDS 410</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy (max. error)</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
<td>0.5</td>
<td>1.0</td>
<td>1.0</td>
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<tr>
<td>Low pressure (up to 500 psi)</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
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<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>High pressure (from 500 psi)</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
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<tr>
<td>Relative pressure</td>
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<td>✔</td>
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<td>✔</td>
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<tr>
<td>Absolute pressure</td>
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<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
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<td>✔</td>
<td>✔</td>
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</tr>
<tr>
<td>Number of switching outputs</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>2</td>
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<tr>
<td>Analogue output</td>
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<td>✔</td>
<td>✔</td>
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<tr>
<td>Digital display</td>
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<td>✔</td>
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<td>✔</td>
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<tr>
<td>Programmable</td>
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<td>✔</td>
<td>✔</td>
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<tr>
<td>Factory-set (not field-adjustable)</td>
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<td>✔</td>
<td>✔</td>
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<td>✔</td>
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<tr>
<td>DESINA-compliant</td>
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<tr>
<td>VDMA Menu Navigation</td>
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<td>Available as individual units</td>
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<tr>
<td>OEM product for large volume production</td>
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<tr>
<td>Flush membrane</td>
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<tr>
<td>IO Link Interface</td>
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<tr>
<td>ECE type authorisation (approved for road vehicles)</td>
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<td>Approval for potentially explosive atmospheres</td>
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</tr>
</tbody>
</table>

**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 ≤ ± 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

**Technical data:**

### Input data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring ranges</td>
<td>1000, 3000, 6000, 9000 psi</td>
</tr>
<tr>
<td>Overload pressures</td>
<td>2900, 7250, 11600, 14500 psi</td>
</tr>
<tr>
<td>Burst pressures</td>
<td>7250, 14500, 29000, 29000 psi</td>
</tr>
</tbody>
</table>

### Output data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy to DIN T6086,</td>
<td>± ± 0.5 % FS typ.</td>
</tr>
<tr>
<td>Max. setting</td>
<td>± ± 1 % FS max.</td>
</tr>
<tr>
<td>Temperature drift</td>
<td>± ± 0.014%/°F max zero point</td>
</tr>
<tr>
<td></td>
<td>± ± 0.014%/°F max. range</td>
</tr>
</tbody>
</table>

### Analog output (optional)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signal selectable</td>
<td>4 .. 20 mA</td>
</tr>
<tr>
<td></td>
<td>load resistance max. 500 Ω</td>
</tr>
<tr>
<td></td>
<td>0 .. 10 V</td>
</tr>
<tr>
<td></td>
<td>load resistance min. 1 kΩ</td>
</tr>
</tbody>
</table>

### Switch outputs

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>PNP transistor output</td>
</tr>
<tr>
<td>Switching current</td>
<td>max. 1.2 A</td>
</tr>
<tr>
<td>Switching cycles</td>
<td>&gt; 100 million</td>
</tr>
<tr>
<td>Reaction time</td>
<td>&lt; 10 ms</td>
</tr>
<tr>
<td>Long-term drift</td>
<td>± ± 0.3 % FS typ. / year</td>
</tr>
</tbody>
</table>

### DESINA® diagnostic signal (Pin 2)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Function</td>
<td>OK: HIGH level / not OK: LOW level</td>
</tr>
<tr>
<td>Level</td>
<td>HIGH: approx. +U_b / LOW: &lt; +0.3 V</td>
</tr>
</tbody>
</table>

### Environmental conditions

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compensated temperature</td>
<td>14..158 °F</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-13..+176°F (-13..+140°F acc. to UL spec.)</td>
</tr>
<tr>
<td>Storage temperature range</td>
<td>-40..+176°F</td>
</tr>
<tr>
<td>Fluid temperature range</td>
<td>-13..+176°F</td>
</tr>
</tbody>
</table>

### Vibration resistance to

<table>
<thead>
<tr>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIN EN 60068-2-6 at 10 .. 500 Hz</td>
</tr>
<tr>
<td>≤ 10 g</td>
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</tbody>
</table>

### Shock resistance to

<table>
<thead>
<tr>
<th>Specification</th>
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</thead>
<tbody>
<tr>
<td>DIN EN 60068-2-29 (11 ms)</td>
</tr>
<tr>
<td>≤ 50 g</td>
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</tbody>
</table>

### Protection class to IEC 60959-9

<table>
<thead>
<tr>
<th>Specification</th>
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<tr>
<td>IP 67</td>
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</table>

### Other data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply voltage</td>
<td>9 .. 35 V DC without analog output</td>
</tr>
<tr>
<td></td>
<td>18 .. 35 V DC with analog output</td>
</tr>
<tr>
<td></td>
<td>- limited energy - according to 9.3 UL 61010; Class 2; UL 1310/1585; LPS UL 60950</td>
</tr>
</tbody>
</table>

### Current consumption

<table>
<thead>
<tr>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>max. 2.455 A total</td>
</tr>
<tr>
<td>max. 35 mA with inactive switching outputs</td>
</tr>
<tr>
<td>max. 55 mA with inactive switching outputs and analog output</td>
</tr>
</tbody>
</table>

### Display

<table>
<thead>
<tr>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-digit, LED, 7 segment, red, height of digits 7 mm</td>
</tr>
</tbody>
</table>

### Weight

<table>
<thead>
<tr>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>~ 120 g</td>
</tr>
</tbody>
</table>

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

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

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

<table>
<thead>
<tr>
<th>Meas. range in psi</th>
<th>Switch point in psi</th>
<th>Hysteresis in psi</th>
<th>Increment* in psi</th>
</tr>
</thead>
<tbody>
<tr>
<td>0..1000</td>
<td>16..1000</td>
<td>6..990</td>
<td>2</td>
</tr>
<tr>
<td>0..3000</td>
<td>45..3000</td>
<td>15..2970</td>
<td>5</td>
</tr>
<tr>
<td>0..6000</td>
<td>90..6000</td>
<td>30..5940</td>
<td>10</td>
</tr>
<tr>
<td>0..9000</td>
<td>140..9000</td>
<td>60..8900</td>
<td>20</td>
</tr>
</tbody>
</table>

### Window function

<table>
<thead>
<tr>
<th>Meas. range in psi</th>
<th>Lower switch value in psi</th>
<th>Upper switch value in psi</th>
<th>Increment* in psi</th>
</tr>
</thead>
<tbody>
<tr>
<td>0..1000</td>
<td>6..990</td>
<td>16..1000</td>
<td>2</td>
</tr>
<tr>
<td>0..3000</td>
<td>15..2970</td>
<td>45..3000</td>
<td>5</td>
</tr>
<tr>
<td>0..6000</td>
<td>30..5940</td>
<td>90..6000</td>
<td>10</td>
</tr>
<tr>
<td>0..9000</td>
<td>60..8900</td>
<td>140..9000</td>
<td>20</td>
</tr>
</tbody>
</table>

* 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.
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.
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 ≤ ± 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: ≤ ± 0.5 % FS typ.
  Max. setting (display, analog output): ≤ ± 1 % FS max.
- Repeatability: ≤ ± 0.25 % FS max.
- Temperature drift: ≤ ± 0.014%/°F max zero point
  ≤ ± 0.014%/°F max. range

Analog output
- Signal: selectable: 4 .. 20 mA
  load resistance max. 500 Ω
  0 .. 10 V
  load resistance min. 1 kΩ

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: ≤ ± 0.3 % FS typ. / year

Parameterization
- Via IO-Link interface, with HYDAC programming device HPG 3000 or push buttons on the EDS 3400

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
- Vibration resistance according to DIN EN 60068-2-6 (0 .. 500 Hz): ≤ 10 g
- Shock resistance according to DIN EN 60068-2-29 (11 ms): ≤ 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: ≤ 0.535 A with active switching outputs
  ≤ 35 mA with inactive switching outputs
  ≤ 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:**

<table>
<thead>
<tr>
<th>Measuring range in psi</th>
<th>Lower limit of RP / FL in psi</th>
<th>Upper limit of SP / FH in psi</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 .. 1000</td>
<td>10</td>
<td>1000</td>
</tr>
<tr>
<td>0 .. 3000</td>
<td>30</td>
<td>3000</td>
</tr>
<tr>
<td>0 .. 6000</td>
<td>60</td>
<td>6000</td>
</tr>
<tr>
<td>0 .. 9000</td>
<td>80</td>
<td>9000</td>
</tr>
</tbody>
</table>

- **Measuring range** between RP and SP & FL and FH in psi
- **Min. difference** between RP and SP
- **Increment**

**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.

**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.

**Pin connections:**

- **M12x1, 4 pole**

**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)

**Dimensions:**

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.
**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. 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 ≤ ± 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) ≤ ± 0.5 % FS typ.
  - ≤ ± 1 % FS max.
- **Repeatability**
  - ≤ ± 0.25 % FS max.
  - ≤ ± 0.014 % / °F max zero point
  - ≤ ± 0.014 % / °F max. range

**Analog output (optional)**
- **Signal** selectable:
  - 4 .. 20 mA
  - 0 .. 10 V
- **Load resistance** max.
  - 500 Ω
  - 1 kΩ

**Switch outputs**
- **Type**
  - PNP transistor output
- **Switching current**
  - max. 1.2 A
- **Switching cycles**
  - > 100 million
- **Reaction time**
  - < 10 ms
- **Long-term drift**
  - ≤ ± 0.3 % FS typ. / year

**DESINA® diagnostic signal (Pin 2)**
- **Function**
  - OK: HIGH level / not OK: LOW level
  - Level
    - HIGH: approx. +U_b / LLOW: < +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
- **Vibration resistance to**
  - DIN EN 60068-2-6 at 10 .. 500 Hz
  - ≤ 10 g
- **Shock resistance to**
  - DIN EN 60068-2-29 (11 ms)
  - ≤ 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
- **Current consumption**
  - max. 2.455 A total
  - max. 55 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

1) 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

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

Window function

<table>
<thead>
<tr>
<th>Meas. range point in psi</th>
<th>Lower switch value in psi</th>
<th>Upper switch value in psi</th>
<th>Increment* in psi</th>
</tr>
</thead>
<tbody>
<tr>
<td>-14 .. 75</td>
<td>0.6 .. 74.0</td>
<td>-12.6 .. 75</td>
<td>0.2</td>
</tr>
<tr>
<td>0 .. 15</td>
<td>0.10 .. 14.85</td>
<td>0.25 .. 15</td>
<td>0.05</td>
</tr>
<tr>
<td>0 .. 30</td>
<td>0.15 .. 29.70</td>
<td>0.45 .. 30</td>
<td>0.05</td>
</tr>
<tr>
<td>0 .. 50</td>
<td>0.3 .. 79.5</td>
<td>0.8 .. 50</td>
<td>0.1</td>
</tr>
<tr>
<td>0 .. 150</td>
<td>1.0 .. 148.5</td>
<td>2.5 .. 150</td>
<td>0.5</td>
</tr>
<tr>
<td>0 .. 250</td>
<td>1.5 .. 247.5</td>
<td>4.0 .. 250</td>
<td>0.5</td>
</tr>
<tr>
<td>0 .. 500</td>
<td>3.495</td>
<td>8 .. 500</td>
<td>1</td>
</tr>
</tbody>
</table>

* 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:**

Male electrical connector
M12X1 4 pole/5 pole

(2.11) ø53.5

(2.47) 62.8
(0.03) 0.7
(0.67) 17
(0.59) 15.1
(0.79) ø20

(1.06) 27 HEX

(0.99) 25.2
(1.65) ø42

(2.96) 75.3
(3.61) 91.8

Display turns thru 270°

Housing turns thru 340°

**Pin connections:**

### M12x1, 4 pole

<table>
<thead>
<tr>
<th>Pin</th>
<th>EDS</th>
<th>EDS</th>
<th>EDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>+U_b</td>
<td>+U_b</td>
<td>+U_b</td>
</tr>
<tr>
<td>2</td>
<td>n.c.</td>
<td>SP 2</td>
<td>Analog</td>
</tr>
<tr>
<td>3</td>
<td>0 V</td>
<td>0 V</td>
<td>0 V</td>
</tr>
<tr>
<td>4</td>
<td>SP 1</td>
<td>SP 1</td>
<td>SP 1</td>
</tr>
</tbody>
</table>

### M12x1, 5 pole

<table>
<thead>
<tr>
<th>Pin</th>
<th>EDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>+U_b</td>
</tr>
<tr>
<td>2</td>
<td>Analog</td>
</tr>
<tr>
<td>3</td>
<td>0 V</td>
</tr>
<tr>
<td>4</td>
<td>SP 1</td>
</tr>
<tr>
<td>5</td>
<td>SP 2</td>
</tr>
</tbody>
</table>

**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.

**HYDAC ELECTRONICS**

90 Southland Dr. Bethlehem, PA 18017
Telephone: 610.266.0100
E-mail: electronics@hydacusa.com
Website: www.hydac-na.com
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 ≤ ± 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
  ≤ ± 0.5 % FS typ.
  ≤ ± 1 % FS max.
- Repeatability
  ≤ ± 0.25 % FS max.
- Temperature drift
  ≤ ± 0.014% /°F max zero point
  ≤ ± 0.014%/°F max. range

Analog output
- Signal selectable:
  4 ... 20 mA load resistance max. 500 Ω
  0 ... 10 V load resistance min. 1 kΩ

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 ≤ ± 0.3 % FS typ. / year

Parameterization
- Via IO-Link interface, with HYDAC programming device HPG 3000 or push buttons on the EDS 3300

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
- Mark
  EN 61000-6-1 / 2 / 3 / 4
- Vibration resistance according to DIN EN 60068-2-6 (0 ... 500 Hz)
  ≤ 10 g
- Shock resistance according to DIN EN 60068-2-29 (11 ms)
  ≤ 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
  ≤ 0.535 A with active switching outputs
  ≤ 35 mA with inactive switching outputs
  ≤ 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:

<table>
<thead>
<tr>
<th>Measuring range in psi</th>
<th>Lower limit of RP / FL in psi</th>
<th>Upper limit of SP / FH in psi</th>
</tr>
</thead>
<tbody>
<tr>
<td>-14.5...75</td>
<td>-13.2</td>
<td>75</td>
</tr>
<tr>
<td>0.15</td>
<td>0.15</td>
<td>15</td>
</tr>
<tr>
<td>0.30</td>
<td>0.30</td>
<td>30</td>
</tr>
<tr>
<td>0.50</td>
<td>0.5</td>
<td>50</td>
</tr>
<tr>
<td>0.150</td>
<td>1.5</td>
<td>150</td>
</tr>
<tr>
<td>0.250</td>
<td>2.5</td>
<td>250</td>
</tr>
<tr>
<td>0.500</td>
<td>5</td>
<td>500</td>
</tr>
</tbody>
</table>

* 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:

**M12x1, 4 pole**

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>L+</td>
<td>Supply voltage</td>
</tr>
<tr>
<td>2</td>
<td>I/Q</td>
<td>Switching output (SP2) / analog output</td>
</tr>
<tr>
<td>3</td>
<td>L-</td>
<td>Gnd</td>
</tr>
<tr>
<td>4</td>
<td>C/Q</td>
<td>IO-Link communication / switching output (SP1)</td>
</tr>
</tbody>
</table>

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 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.

HYDAC ELECTRONICS
90 Southland Dr. Bethlehem, PA 18017
Telephone +1 (810) 266-0100
E-mail: electronics@hydacusa.com
Website: www.hydac-na.com
**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 ≤ ± 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: 30 lb-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, (display, analog output): ≤ ± 0.5 % FS typ.
- Repeatability: ≤ ± 0.25 % FS max.
- Temperature drift: ≤ ± 0.01%/°F max zero point
- Analog output (optional): Signal selectable: 4 .. 20 mA
  - load resistance max. 500 W
  - 0 .. 10 V
  - load resistance min. 1 kΩ

**Switch outputs**
- Type: PNP transistor output
- Switching current: max. 1.2 A
- Switching cycles: > 100 million
- Reaction time: < 10 ms
- Long-term drift: ≤ ± 0.3 % FS typ. / year

**DESINA® diagnostic signal (Pin 2)**
- Function: OK: HIGH level / not OK: LOW level
- Level: HIGH: approx. +Ug / 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

**Mark**
- Certificate No. E318391

**Vibration resistance to DIN EN 60068-2-6 at 10 .. 500 Hz**
- ≤ 10 g

**Shock resistance to DIN EN 60068-2-29 (11 ms)**
- ≤ 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
- Current consumption: max. 2.455 A total
  - max. 35 mA with inactive switching outputs
  - max. 55 mA with inactive switching outputs and analog 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 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:

<table>
<thead>
<tr>
<th>Meas. range in psi</th>
<th>Switch point in psi</th>
<th>Hysteresis in psi</th>
<th>Increment* in psi</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 .. 15</td>
<td>0.25 .. 15.00</td>
<td>0.10 .. 14.85</td>
<td>0.05</td>
</tr>
<tr>
<td>0 .. 50</td>
<td>0.8 .. 50.00</td>
<td>0.3 .. 49.5</td>
<td>0.1</td>
</tr>
</tbody>
</table>

Window function

<table>
<thead>
<tr>
<th>Meas. range in psi</th>
<th>Lower switch value in psi</th>
<th>Upper switch value in psi</th>
<th>Increment* in psi</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 .. 15</td>
<td>0.25 .. 15.00</td>
<td>0.10 .. 14.85</td>
<td>0.05</td>
</tr>
<tr>
<td>0 .. 50</td>
<td>0.8 .. 50.00</td>
<td>0.3 .. 49.5</td>
<td>0.1</td>
</tr>
</tbody>
</table>

* 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
8 = Male M12x1, 5 pole

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.
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.
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 ≤ ± 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)

### Output data
- Output signals: Output 1: PNP transistor switching output
- Accuracy to DIN 16086
  - Max. setting (display, analog output) ≤ ± 0.5 % FS typ.
  - ≤ ± 1 % FS max.
- Repeatability: ≤ ± 0.25 % FS max.
- Temperature drift
  - ≤ ± 0.014%/°F max zero point
  - ≤ ± 0.014%/°F max. range

### Analog output
- Signal: selectable: 4 .. 20 mA, 0 .. 10 V

### 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: ≤ ± 0.3 % FS typ. / year

### Parameterization
- Via IO-Link interface, with HYDAC programming device HPG 3000 or push buttons on the EDS 3100

### 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
- EN mark: EN 61000-6-1 / 2 / 3 / 4
- Vibration resistance according to DIN EN 60068-2-6 (0 .. 500 Hz): ≤ 10 g
- Shock resistance according to DIN EN 60068-2-29 (11 ms): ≤ 50 g
- Protection class to IEC 60529: IP 67

### Other data
- Supply voltage: 9 .. 35 V DC without analog output
- ≤ 35 mA with inactive switching outputs
- ≤ 55 mA with active switching outputs
- ≤ 0.535 A with analog output
- Current consumption: ≤ 0.535 A with active switching outputs
- ≤ 35 mA with inactive switching outputs
- ≤ 55 mA with active switching outputs
- 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:

<table>
<thead>
<tr>
<th>Measuring range in psi</th>
<th>Lower limit of RP / FL in psi</th>
<th>Upper limit of SP / FH in psi</th>
</tr>
</thead>
<tbody>
<tr>
<td>0...15</td>
<td>0.15</td>
<td>15</td>
</tr>
<tr>
<td>0...50</td>
<td>0.5</td>
<td>50</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Measuring range in psi</th>
<th>Min. difference between RP and SP &amp; FL and FH in psi</th>
<th>Increment*</th>
</tr>
</thead>
<tbody>
<tr>
<td>0...15</td>
<td>0.15</td>
<td>0.05</td>
</tr>
<tr>
<td>0...50</td>
<td>0.5</td>
<td>0.1</td>
</tr>
</tbody>
</table>

* 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 psi
  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:

- Male electrical connector
  M12x1 4 pole/5 pole

- Display
  270º
  Housing turns thru 340º

- Display turns thru 270º

- Housing turns thru 340º

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.

HYDAC ELECTRONICS
90 Southland Dr, Bethlehem, PA 18017
Telephone +1 610.266.0100
E-mail: electronics@hydacusa.com
Website: www.hydac-na.com
**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 ≤ ± 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:**

<table>
<thead>
<tr>
<th>Input data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring ranges</td>
</tr>
<tr>
<td>Overload pressures</td>
</tr>
<tr>
<td>Burst pressures</td>
</tr>
<tr>
<td>Mechanical connection</td>
</tr>
<tr>
<td>Torque value</td>
</tr>
<tr>
<td>Parts in contact with medium</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Output data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy to DIN 16086, Max. setting (display, analog output)</td>
</tr>
<tr>
<td>Repeatability</td>
</tr>
<tr>
<td>Temperature drift</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Analog output (optional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signal</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Switch outputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
</tr>
<tr>
<td>Switching current</td>
</tr>
<tr>
<td>Switching cycles</td>
</tr>
<tr>
<td>Reaction time</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Environmental conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compensation temperature range</td>
</tr>
<tr>
<td>Operating temperature range</td>
</tr>
<tr>
<td>Storage temperature range</td>
</tr>
<tr>
<td>Fluid temperature range</td>
</tr>
</tbody>
</table>

**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

<table>
<thead>
<tr>
<th>Meas. range in psi</th>
<th>Switch point in psi</th>
<th>Hysteresis in psi</th>
<th>Increment* in psi</th>
</tr>
</thead>
<tbody>
<tr>
<td>-14.5...75</td>
<td>0..150</td>
<td>-125...75.0</td>
<td>-0.5...74.0</td>
</tr>
<tr>
<td>0..1000</td>
<td>1..150</td>
<td>1..148</td>
<td></td>
</tr>
<tr>
<td>0..3000</td>
<td>5..990</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>0..6000</td>
<td>15..3000</td>
<td>15...2970</td>
<td>20</td>
</tr>
<tr>
<td>0..9000</td>
<td>90..9000</td>
<td>90...5940</td>
<td>30</td>
</tr>
<tr>
<td>90..8900</td>
<td>150..9000</td>
<td>150...8900</td>
<td>50</td>
</tr>
</tbody>
</table>

Window function

<table>
<thead>
<tr>
<th>Meas. range in psi</th>
<th>Lower switch value in psi</th>
<th>Upper switch value in psi</th>
<th>Increment* in psi</th>
</tr>
</thead>
<tbody>
<tr>
<td>-14.5..75</td>
<td>0..150</td>
<td>1..150</td>
<td>0.5</td>
</tr>
<tr>
<td>0..1000</td>
<td>10..995</td>
<td>15..1000</td>
<td>5</td>
</tr>
<tr>
<td>0..3000</td>
<td>40..2980</td>
<td>45..3000</td>
<td>20</td>
</tr>
<tr>
<td>0..6000</td>
<td>60..5970</td>
<td>90..6000</td>
<td>30</td>
</tr>
<tr>
<td>0..9000</td>
<td>100..8950</td>
<td>150..9000</td>
<td>50</td>
</tr>
</tbody>
</table>

* 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 ± 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.
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.

HYDAC ELECTRONICS
90 Southland Dr. Bethlehem, Pa 18017
Telephone +1 610.266.0100
E-mail: electronics@hydacusa.com
Website: www.hydac-na.com

Dimensions:

Pin connections:

EN175301-803 (DIN 43650)

<table>
<thead>
<tr>
<th>Pin</th>
<th>EDS 355-1</th>
<th>EDS 356-1</th>
<th>EDS 356-2</th>
<th>EDS 356-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>+Uₐ</td>
<td>+Uₐ</td>
<td>+Uₐ</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>n.c.</td>
<td>SP 2</td>
<td>Analog</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>0 V</td>
<td>0 V</td>
<td>0 V</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>SP 1</td>
<td>SP 1</td>
<td>SP 1</td>
<td></td>
</tr>
</tbody>
</table>

M12x1, 4 pole

<table>
<thead>
<tr>
<th>Pin</th>
<th>EDS 358-5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>+Uₐ</td>
</tr>
<tr>
<td>2</td>
<td>Analog</td>
</tr>
<tr>
<td>3</td>
<td>0 V</td>
</tr>
<tr>
<td>4</td>
<td>SP 1</td>
</tr>
<tr>
<td>5</td>
<td>SP 2</td>
</tr>
</tbody>
</table>
**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.

**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, (display, analog output): ≤ ± 0.5 % FS typ.
- Max. setting: ≤ ± 1 % FS max.
- Repeatability: ≤ ± 0.5 % FS max.
- Temperature drift: ≤ ± 0.017%/°F max. zero point
- Analog output: ≤ ± 0.017%/°F max. range

**Switch outputs**
- Signal: 4 .. 20 mA
- Load resistance: ≤ 400 Ω
- Output resistance: ≤ 400 Ω

**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
- Vibration resistance to EN 61000-6-1 / 2 / 3 / 4
  - 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 55

**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

**Approvals:**
- American Bureau of Shipping
- Lloyd's Register of Shipping
- Det Norske Veritas
- Germanischer Lloyd
- Bureau Veritas
- Other approvals on request

**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

<table>
<thead>
<tr>
<th>Meas. range</th>
<th>Switch point</th>
<th>Hysteresis</th>
<th>Increment*</th>
</tr>
</thead>
<tbody>
<tr>
<td>in psi</td>
<td>in psi</td>
<td>in psi</td>
<td></td>
</tr>
<tr>
<td>-14.5..75</td>
<td>-125..750</td>
<td>-0.5..74.0</td>
<td>0.5</td>
</tr>
<tr>
<td>0..150</td>
<td>3..150</td>
<td>1..148</td>
<td>1</td>
</tr>
<tr>
<td>0..1000</td>
<td>15..1000</td>
<td>5..990</td>
<td>5</td>
</tr>
<tr>
<td>0..3000</td>
<td>45..3000</td>
<td>15..2970</td>
<td>15</td>
</tr>
<tr>
<td>0..6000</td>
<td>90..6000</td>
<td>30..5940</td>
<td>30</td>
</tr>
<tr>
<td>0..9000</td>
<td>150..9000</td>
<td>50..8900</td>
<td>50</td>
</tr>
</tbody>
</table>

* 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 ± 3 % FS possible

Pin connections:

DIN 43651

<table>
<thead>
<tr>
<th>Pin</th>
<th>EDS 347-4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>+Ua</td>
</tr>
<tr>
<td>2</td>
<td>Center relay 1 and 2</td>
</tr>
<tr>
<td>3</td>
<td>Relay contact 1 (SP 1)</td>
</tr>
<tr>
<td>4</td>
<td>0 V</td>
</tr>
<tr>
<td>5</td>
<td>Analog</td>
</tr>
<tr>
<td>6</td>
<td>Relay contact 2 (SP 2)</td>
</tr>
<tr>
<td>7</td>
<td>Housing</td>
</tr>
</tbody>
</table>

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:
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.
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 ± 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**: ± 0.5 % FS typ. (display)
- **Max. setting (display)**: ± 1 % FS max.
- **Repeatability**: ± 0.5 % FS max.
- **Temperature drift (environment)**: ± 0.017% FS/F max. zero point, ± 0.017% FS/F max. range
- **Long-term stability**: ± 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**: -13..+185°F
- **Storage temperature range**: -40..+185°F
- **Fluid temperature range**: -40..+257°F
- **Nominal temperature range of display (read-out)**: 5..158°F
- **Mark**: EN 61000-6-1/2/3/4
- **Mark**: 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**: 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

1) -13 °F with FPM seal, -40 °F on request

2) 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:

<table>
<thead>
<tr>
<th>Meas. range in psi</th>
<th>Lower limit of RP / FL in psi</th>
<th>Upper limit of SP / FH in psi</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 .. 500</td>
<td>5</td>
<td>500</td>
</tr>
<tr>
<td>0 .. 1000</td>
<td>10</td>
<td>1000</td>
</tr>
<tr>
<td>0 .. 3000</td>
<td>30</td>
<td>3000</td>
</tr>
<tr>
<td>0 .. 6000</td>
<td>60</td>
<td>6000</td>
</tr>
<tr>
<td>0 .. 9000</td>
<td>90</td>
<td>9000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Meas. range in psi</th>
<th>Min. difference between RP &amp; SP and FL &amp; FH in psi</th>
<th>Increment* in psi</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 .. 500</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>0 .. 1000</td>
<td>10</td>
<td>2</td>
</tr>
<tr>
<td>0 .. 3000</td>
<td>30</td>
<td>5</td>
</tr>
<tr>
<td>0 .. 6000</td>
<td>60</td>
<td>10</td>
</tr>
<tr>
<td>0 .. 9000</td>
<td>90</td>
<td>20</td>
</tr>
</tbody>
</table>

* 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

Dimensions:

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Value (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male electrical connector M12X14 pole</td>
<td>(1.16) ø29.4</td>
</tr>
<tr>
<td>(1.02) ø25.9</td>
<td></td>
</tr>
<tr>
<td>(0.42) 11</td>
<td></td>
</tr>
<tr>
<td>(0.22) 5.6</td>
<td></td>
</tr>
<tr>
<td>(1.64) 41.7</td>
<td></td>
</tr>
<tr>
<td>(2.43) 61.8</td>
<td></td>
</tr>
<tr>
<td>(0.16) 4.1</td>
<td></td>
</tr>
<tr>
<td>(0.1) 2.5</td>
<td></td>
</tr>
<tr>
<td>(0.39) 10</td>
<td></td>
</tr>
<tr>
<td>(0.74) ø19</td>
<td></td>
</tr>
<tr>
<td>(0.93) ø23.5</td>
<td></td>
</tr>
</tbody>
</table>

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.

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.
**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 ≤ ± 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): ≤ ± 1% FS max.
- Repeatability: ≤ ± 0.5% FS max.
- Temperature drift:
  - Max. zero point: ≤ ± 0.03% FS/°F
  - Max. range: ≤ ± 0.03% FS/°F

**Analog output (optional):**
- Signal selectable:
  - 4 .. 20 mA: ohmic resistance ≤ 400 Ω
  - 0 .. 10 V: ohmic resistance ≥ 2 kΩ

**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..+158°F

**Mark:**
- EN 61000-6-1 / 2 / 3 / 4
- Vibration resistance to DIN EN 60068-2-6: 5 g (0..500 Hz)
- Shock resistance to DIN EN 60068-2-29: 1200 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:

<table>
<thead>
<tr>
<th>Pin</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>+U₀</td>
</tr>
<tr>
<td>2</td>
<td>0 V</td>
</tr>
<tr>
<td>3</td>
<td>Analog</td>
</tr>
<tr>
<td></td>
<td>Housing</td>
</tr>
</tbody>
</table>

DIN 43651 (relay outputs)

<table>
<thead>
<tr>
<th>Pin</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Relay 1 N/C</td>
</tr>
<tr>
<td>2</td>
<td>Relay 1 N/O</td>
</tr>
<tr>
<td>3</td>
<td>Center relay 1</td>
</tr>
<tr>
<td>4</td>
<td>Relay 2 N/C</td>
</tr>
<tr>
<td>5</td>
<td>Relay 2 N/O</td>
</tr>
<tr>
<td>6</td>
<td>Center relay 2</td>
</tr>
<tr>
<td>PE</td>
<td>Housing</td>
</tr>
</tbody>
</table>

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.

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.

HYDAC ELECTRONICS
90 Southland Dr. Bethlehem, PA 18107
Telephone +1 (610) 266 0100
E-mail: electronics@hydacusa.com
Website: www.hydac-na.com
**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 .. 10 V) 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: ≤ ± 0.25% FS B.F.S.L.
  - EDS 1700-N: ≤ ± 0.5% FS B.F.S.L.
- Repeatability:
  - EDS 1700-P: ≤ ± 0.25% FS max.
  - EDS 1700-N: ≤ ± 0.5% FS max.
- Temperature drift EDS 1700-P:
  - ≤ ± 0.012% FS°F max. zero point & range
- Temperature drift EDS 1700-N:
  - ≤ ± 0.017% FS°F max. zero point & range

**Analog output**
- Signal (selectable):
  - 4 .. 20 mA ohmic resistance ≤ 400Ω
  - 0 .. 10 V ohmic resistance ≥ 2 kΩ

**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
- Mark: EN 61000-6-1 / 2 / 3 / 4
- Vibration resistance to DIN EN 60068-2-6 (0 .. 500 Hz): ≤ 5 g
- Shock resistance to DIN EN 60068-2-29 (1 ms): ≤ 10 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: ≤ 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:

<table>
<thead>
<tr>
<th>Pin</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>+Ua</td>
</tr>
<tr>
<td>2</td>
<td>0 V</td>
</tr>
<tr>
<td>3</td>
<td>Analog output Signal +</td>
</tr>
<tr>
<td>4</td>
<td>Analog output Signal - (0 V)</td>
</tr>
<tr>
<td>5</td>
<td>Relay 1 N/C</td>
</tr>
<tr>
<td>6</td>
<td>Relay 1 N/O</td>
</tr>
<tr>
<td>7</td>
<td>Center relay 1 and 2</td>
</tr>
<tr>
<td>8</td>
<td>Relay 2 N/C</td>
</tr>
<tr>
<td>9</td>
<td>Relay 2 N/O</td>
</tr>
<tr>
<td>10</td>
<td>Relay 3 N/C</td>
</tr>
<tr>
<td>11</td>
<td>Relay 3 N/O</td>
</tr>
<tr>
<td>12</td>
<td>Center relay 3 and 4</td>
</tr>
<tr>
<td>13</td>
<td>Relay 4 N/C</td>
</tr>
<tr>
<td>14</td>
<td>Relay 4 N/O</td>
</tr>
</tbody>
</table>

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.
**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 ≤ ± 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:** 15 lb-ft (20 Nm)
- **Parts in contact with medium:** Mech. conn.: Stainless steel
- **Seal:** FPM

**Output data**

- **Accuracy to DIN 16086:** ≤ ± 0.5% FS typ.
- **Max. setting:** ≤ ± 1% FS max.
- **Repeatability:** ≤ ± 0.1% FS max.
- **Temperature drift:** ≤ ± 0.017%/°F max. zero point
- **Switching direction:** Switching directions user-programmable with HYDAC Programming Unit HPG 3000
- **Switching points / Hysteresis:** Switching points / Hysteresis user-programmable with HYDAC Programming Unit HPG 3000
- **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

**Environmental conditions**

- **Compensated temperature range:** -13...+185°F
- **Operating temperature range:** -13...+185°F
- **Storage temperature range:** -40...+212°F
- **Fluid temperature range:**
  - -40...+212°F
  - Fluid temperature range
- **Mark:**
  - Certificate No. E318391
- **Vibration resistance to DIN EN 60068-2-6 at 10...500 Hz:** ≤ 20 g
- **Shock resistance to DIN EN 60068-2-29 (1 ms):** ≤ 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 UL 61010 Class 2:**
  - UL 1310/1585; LPS UL 60950
  - Current consumption
    - ≤ 25 mA with inactive switching outputs
    - ≤ 1.225 A with 1 switching output
    - ≤ 2.025 A with 2 switching outputs
- **Residual ripple of supply voltage:** ≤ 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

1) -13 °F with FPM seal, -40 °F on request

2) 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:

<table>
<thead>
<tr>
<th>Measuring range in psi</th>
<th>Increment in psi</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 … 1000</td>
<td>2</td>
</tr>
<tr>
<td>0 … 3000</td>
<td>5</td>
</tr>
<tr>
<td>0 … 6000</td>
<td>10</td>
</tr>
<tr>
<td>0 … 9000</td>
<td>20</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Minimum value in ms</th>
<th>Maximum value in ms</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>2040</td>
</tr>
</tbody>
</table>

The increment for all instruments is 8 ms.

Pin connections:
M12x1, 5 pole

<table>
<thead>
<tr>
<th>Pin</th>
<th>Process connection</th>
<th>HPG connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>+U_b</td>
<td>+U_b</td>
</tr>
<tr>
<td>2</td>
<td>Out 2</td>
<td>n.c.</td>
</tr>
<tr>
<td>3</td>
<td>0 V</td>
<td>0 V</td>
</tr>
<tr>
<td>4</td>
<td>Out 1</td>
<td>n.c.</td>
</tr>
<tr>
<td>5</td>
<td>n.c.</td>
<td>Comport</td>
</tr>
</tbody>
</table>

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:

Programming Unit:
(must be ordered separately)
HPG 3000 – 000
Portable Programming Unit
Part. No. 909422
HPG 3000 Power Supply with connector:
Part #02091103

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.
**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 ≤ ±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**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring ranges</td>
<td>15, 50, 100, 250, 500 psi</td>
</tr>
<tr>
<td>Overload pressures</td>
<td>45, 150, 290, 725, 1500 psi</td>
</tr>
<tr>
<td>Burst pressures</td>
<td>70, 250, 400, 1000, 2500 psi</td>
</tr>
<tr>
<td>Mechanical connection</td>
<td>1/4-18 NPT (male)</td>
</tr>
<tr>
<td>Torque value</td>
<td>15-20 lb-ft (20 Nm)</td>
</tr>
<tr>
<td>Parts in contact with medium</td>
<td>Mech. connection: Stainless steel Seal: FPM / EPDM (as per model code)</td>
</tr>
</tbody>
</table>

**Output data**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy to DIN 16086, Max. setting</td>
<td>≤ ± 0.5% FS typ. ≤ ± 1% FS max.</td>
</tr>
<tr>
<td>Repeatability</td>
<td>≤ ± 0.1% FS max.</td>
</tr>
<tr>
<td>Temperature drift</td>
<td>≤ ± 0.017%/°F max. zero point ≤ ± 0.017%/°F max. range</td>
</tr>
<tr>
<td>Switch output</td>
<td>1 or 2 transistor switch outputs PNP or NPN N/C or N/O</td>
</tr>
<tr>
<td>Output load</td>
<td>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</td>
</tr>
</tbody>
</table>

**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**

≤ ± 0.3% FS typ. / year

**Environmental conditions**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compensated temperature range</td>
<td>-13..+185°F</td>
</tr>
<tr>
<td>Operating temperature range</td>
<td>-13..+185°F</td>
</tr>
<tr>
<td>Storage temperature range</td>
<td>-40..+212°F</td>
</tr>
<tr>
<td>Fluid temperature range</td>
<td>-40..+212°F/ -13..+212°F</td>
</tr>
<tr>
<td>EN 61000-6-1/2/3/4</td>
<td>EN 61000-6-1/2/3/4</td>
</tr>
<tr>
<td>Certificate No.</td>
<td>E318391</td>
</tr>
<tr>
<td>Vibration resistance</td>
<td>≤ 20 g</td>
</tr>
<tr>
<td>DIN EN 60068-2-6 at 10..500 Hz</td>
<td>≤ 100 g</td>
</tr>
<tr>
<td>Shock resistance to</td>
<td>IP b7 (M12X1), when an IP 67/ connector is used</td>
</tr>
<tr>
<td>Protection class to IEC 60529</td>
<td>UL and C22.2 No 60950</td>
</tr>
<tr>
<td>Protection class to IEC 60529</td>
<td>EN 61010-1/2/3/4</td>
</tr>
<tr>
<td>Protection class to IEC 60529</td>
<td>EN 61010-1/2/3/4</td>
</tr>
</tbody>
</table>

**Other data**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply voltage for use acc. to UL spec.</td>
<td>8 .. 32 V DC - limited energy - according to 9.3 UL 61010; Class 2; UL 1310/1585; LPS UL 60950</td>
</tr>
<tr>
<td>Current consumption</td>
<td>≤ 25 mA with inactive switching outputs ≤ 1.225 A with 1 switching output ≤ 2.025 A with 2 switching outputs</td>
</tr>
<tr>
<td>Residual ripple of supply voltage</td>
<td>≤ 5 %</td>
</tr>
<tr>
<td>Life expectancy</td>
<td>&gt; 10 million cycles, 0 .. 100 % FS</td>
</tr>
<tr>
<td>Weight</td>
<td>~ 145 g</td>
</tr>
</tbody>
</table>

**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

-13 °F with FPM or EPDM seal. -40 °F on request

Environmental conditions according to 1.4.2 UL 61010-1; C22.2 No 61010-1

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*FS (Full Scale) = relative to the complete measurement range
-13 °F with FPM or EPDM seal. -40 °F on request

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:

<table>
<thead>
<tr>
<th>Measuring range in psi</th>
<th>Increment in psi</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 .. 15</td>
<td>0.05</td>
</tr>
<tr>
<td>0 .. 50</td>
<td>0.05</td>
</tr>
<tr>
<td>0 .. 100</td>
<td>0.2</td>
</tr>
<tr>
<td>0 .. 250</td>
<td>0.5</td>
</tr>
<tr>
<td>0 .. 500</td>
<td>1</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Minimum value in ms</th>
<th>Maximum value in ms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switch-on delay</td>
<td>8</td>
</tr>
<tr>
<td>Ton1/Ton2</td>
<td>2040</td>
</tr>
<tr>
<td>Switch-off delay</td>
<td>8</td>
</tr>
<tr>
<td>ToF1/ToF2</td>
<td>2040</td>
</tr>
</tbody>
</table>

The increment for all instruments is 8 ms.

Pin connections:
M12x1, 5 pole

<table>
<thead>
<tr>
<th>Pin</th>
<th>Process connection</th>
<th>HPG connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>+Ua</td>
<td>+Ua</td>
</tr>
<tr>
<td>2</td>
<td>Out 2</td>
<td>n.c.</td>
</tr>
<tr>
<td>3</td>
<td>0 V</td>
<td>0 V</td>
</tr>
<tr>
<td>4</td>
<td>Out 1</td>
<td>n.c.</td>
</tr>
<tr>
<td>5</td>
<td>n.c.</td>
<td>Comport</td>
</tr>
</tbody>
</table>

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:

<table>
<thead>
<tr>
<th>Pin</th>
<th>Process connection</th>
<th>HPG connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>+Ua</td>
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<td>Out 2</td>
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<tr>
<td>3</td>
<td>0 V</td>
<td>0 V</td>
</tr>
<tr>
<td>4</td>
<td>Out 1</td>
<td>n.c.</td>
</tr>
<tr>
<td>5</td>
<td>n.c.</td>
<td>Comport</td>
</tr>
</tbody>
</table>

Note:
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**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 ≤ ± 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: 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:
  - ≤ ± 0.5 % FS typ.
  - ≤ ± 1.0 % FS max.
- Repeatability:
  - ≤ ± 0.1 % FS max.
- Temperature drift:
  - ≤ ± 0.017% FS°F max. zero point
  - ≤ ± 0.017% FS°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:
  - ≤ ± 0.3 % FS typ. / year

**Parameterization**
- Via IO-Link interface, with HYDAC programming device HPG 3000

**Environmental conditions**
- Compensated temperature range: -13..+185°F
- Operating temperature range:
  - -40..+185°F / -13..+185°F
- Storage temperature range: -40..+212°F
- Fluid temperature range:
  - -40..+257°F / -13..+257°F
- Vibration resistance acc. to DIN EN 60068-2-6 at 0..500 Hz:
  - ≤ 25 g
- Shock resistance according to DIN EN 60068-2-29 (11 ms):
  - ≤ 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: ≤ 5 %
- Current consumption:
  - ≤ 25 mA with inactive switching outputs
  - ≤ 0.275 A with 1 active switching output
  - ≤ 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

1) -13 °F for EPM seal, -40 °F on request
**Pin connections:**

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>L+</td>
<td>Supply voltage</td>
</tr>
<tr>
<td>2</td>
<td>I/Q</td>
<td>Switching output (SP2) / analog output</td>
</tr>
<tr>
<td>3</td>
<td>L-</td>
<td>Gnd</td>
</tr>
<tr>
<td>4</td>
<td>C/Q</td>
<td>IO-Link communication / switching output (SP1)</td>
</tr>
</tbody>
</table>

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

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

**Dimensions:**

- Male electrical connector M12X1 4 pole
- Male electrical connector M12X1 4 pole

**IO-Link-specific data:**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Baud rate</td>
<td>38.4 kBaud *</td>
</tr>
<tr>
<td>Cycle time</td>
<td>2.5 ms</td>
</tr>
<tr>
<td>Process data width</td>
<td>16 Bit</td>
</tr>
<tr>
<td>Frame type</td>
<td>2.2</td>
</tr>
<tr>
<td>Specification</td>
<td>V1.1</td>
</tr>
</tbody>
</table>

* 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.

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