The differential pressure sensor DDS-DL is based on the principle of two silicon membranes rotated at 90° relative to each other so that they deflect under the differential pressure. The ohmic resistance which changes as a result of the deflection is captured as the measured variable. The displacement of the membranes relative to each other guarantees, even at the least pressure, position-independent signal accuracy.

A microprocessor converts the differential pressure signal into a serial digital signal suitable for the DL-bus (data link).

The high pressure connection tube is visible in the figure. The connection point for the low pressure tube is located behind it.

The sensor has the following features:

- Differential pressure measurement between -100 and +100 Pascal (1 bar = 10^5 Pa)
- Accurate to less than 2%
- Measurement output over the DL-bus
- Power supply via the DL-bus
- Measurement processing and output using four different averaging periods
**Bus addressing:**

The sensor takes its power supply from the DL-bus (data link) and returns the corresponding measurement when requested by the controller (ESR31 and UVR63 from version 1.0, ESR21, UVR61-3 and UVR63H from version 5.0, UVR1611 from version A3.00 and serial number 13286 and UVR16x2). The request is made up of the address of the sensor (adapter PCB) and index of a measurement recorded there.

The address is specified on the adapter by breaking the conductors which are labelled (1), 2 and 4. These are located on the short PCB side close to the actual pressure sensor. If none of the conductors are cut, the adapter is assigned address 1 (factory setting). Provided no other sensors are connected to the DL-bus, no change of address is required.

For the differential pressure sensor DDS-DL, conductor 1 is unassigned (has no function). Therefore only the addresses 1 (=factory setting), 3, 5 or 7 can be assigned. The new address is derived from address 1 (= factory setting) plus the sum of all the disconnected values.

**Example:** required address 7 = 1 (factory setting) + 2 + 4
=> conductors 2 and 4 must be cut.

The index number is used to access different signal mathematical averages of the measurement:

<table>
<thead>
<tr>
<th>Index</th>
<th>Measurement:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Differential pressure average = 4 seconds</td>
</tr>
<tr>
<td>2</td>
<td>Differential pressure average = 16 seconds</td>
</tr>
<tr>
<td>3</td>
<td>Differential pressure average = 64 seconds</td>
</tr>
<tr>
<td>4</td>
<td>Differential pressure average = 256 seconds</td>
</tr>
</tbody>
</table>

ESR21, ESR31, UVR61-3, UVR63, UVR63H: The desired measured values are imported as "External sensors" (setting in the menu "EXT DL"), where address and index are specified.

**Example:** Here the external sensor E3 has been allocated the sensor value of address 1 with index 3, that is the differential pressure average = 64 seconds.

UVR16x2: The measured values are parameterised in the menu "DL bus".

UVR1611: The measurements are parameterised as analog network inputs:

- **NW.Node:** Sensor address (above example: 1)
- **Anal.NW.Outp.:** Measurement value index (above example: 3)
- **Source:** DL
If a quick pressure change takes place, the mean time indicates the increase of the output value to 63% (\(\tau\)) of the final value. Thus to calculate the actual final value, averaging must take place over a considerably longer time (95% = 3\(\tau\)/ 99% = 5\(\tau\))

The sensor value is given in °C and can be processed as per temperatures in the controller (e.g. 50.0 Pascal = 50.0 °C).

**Technical data:**

- Pressure measurement range: -100 Pascal to +100 Pascal, resolution 0,1 Pascal
- Burst pressure: 0.4 Bar
- Accuracy: ± 2.0% of the final value / +- 2 Pascal
- Permissible ambient temperature: 5 to 60°C
- Bus load (DL-Bus): 38 %
- Operating voltage: Direct supply via the DL-bus – mind polarity
- Connection: for tube i.d. 1.6 mm supplied with tube i.d. = 1.6 / o.d. = 3 / length = 2000 mm
- Quantity delivered: temperature resistant chimney connection piece comprising silicone tube (L = 50 mm) and stainless steel tube 6 x 200 mm

We reserve the right to make any technical changes © 2015