



# Differential pressure sensor



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
- 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** (from version 1.0), **ESR21**, **UVR61-3** and **UVR63H** from version 5.0 and **UVR1611** from version A3.00). 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:

<i>Index:</i>	<i>Measurement:</i>
1	Differential pressure average = 4 seconds
2	Differential pressure average = 16 seconds
3	Differential pressure average = 64 seconds
4	Differential pressure average = 256 seconds

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% =  $5\tau$ )

## Technical data:

Pressure measurement range:	-100 Pascal to +100 Pascal
Burst pressure:	0.4 Bar
Accuracy:	$\pm 2.0\%$ 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