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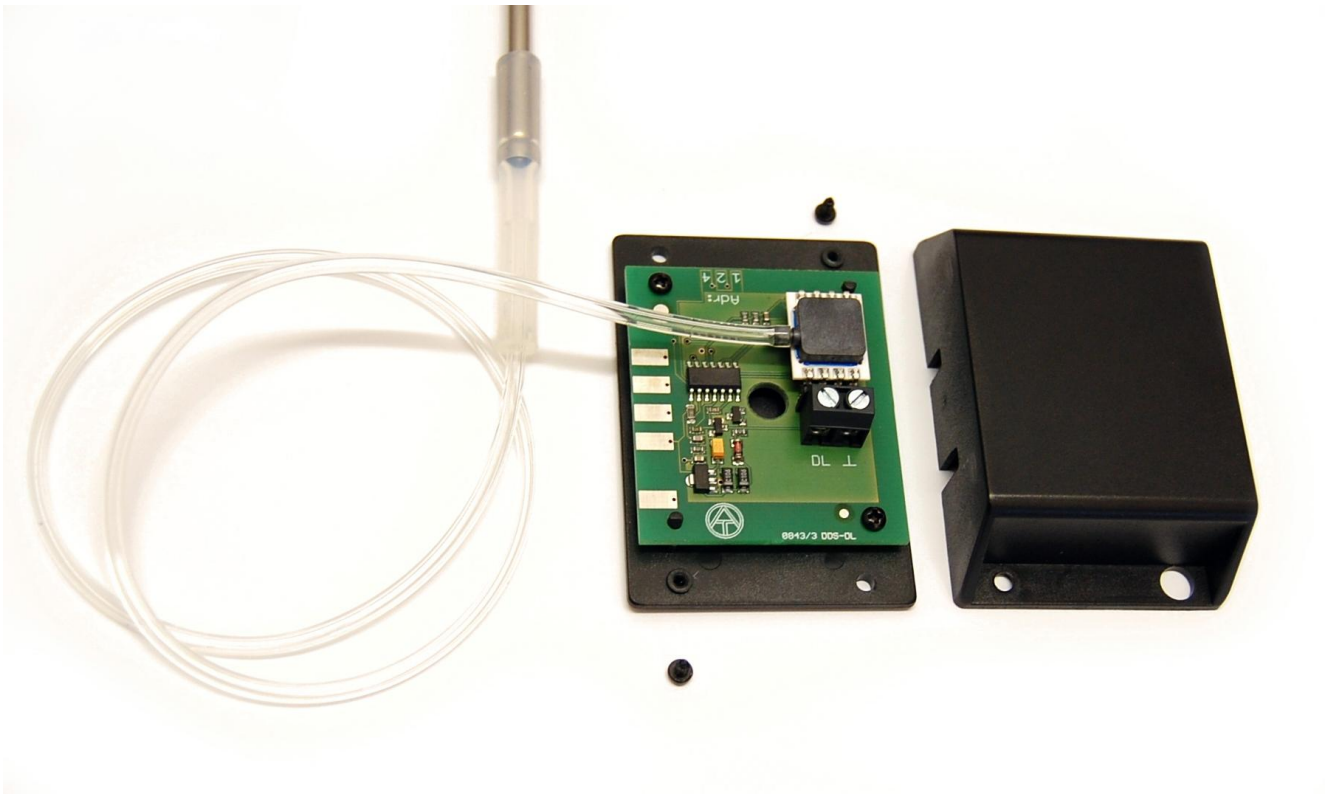
Differential pressure sensor



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).

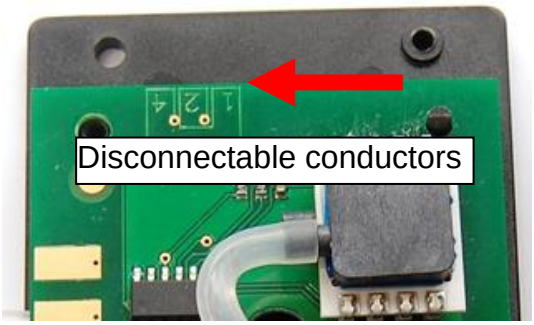
The high pressure connection tube is visible in the figure. The connection point for the low pressure tube is located behind it.

<u>The sensor has the following features:</u>

- 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.

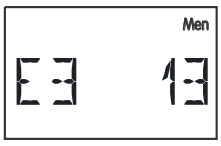
Example: required address 7 = 1 (factory setting) + 2 + 4
=> conductors 2 and 4 must be cut.

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

Index:	*Measurement:*
1	Differential pressure average = 4 seconds
2	Differential pressure average = 16 seconds
3	Differential pressure average = 64 seconds
4	Differential pressure average = 256 seconds

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% (τ) of the final value. Thus to calculate the actual final value, averaging must take place over a considerably longer time (95% = 3τ/ 99% = 5τ)

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