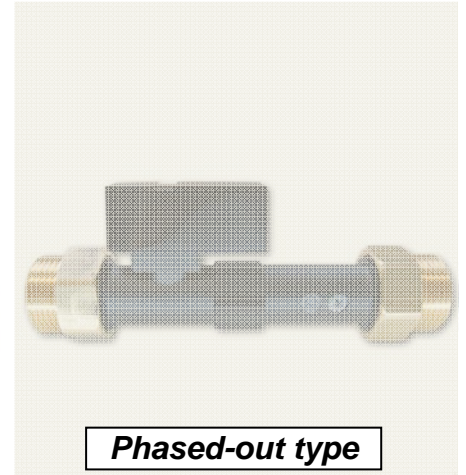
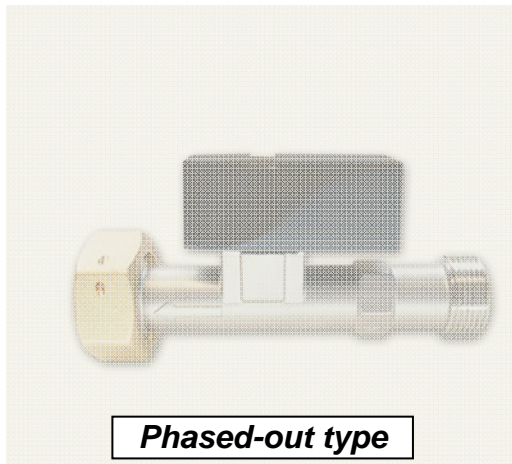




Electronic volume flow sensors



The measurement principle of the electronic volume flow sensor VFS.... is based on Karman vortex streets. The frequency of the vortices shed by an obstructing body mounted in the flow is directly proportional to the flow velocity. A microprocessor uses a silicone membrane to record these vibrations as well as the medium temperature and produces precise corresponding voltages.

In the type VFS....DL, a second microprocessor converts the analogue measurements into a serial digital signal suitable for the DL bus (data link).

The sensor has the following features:

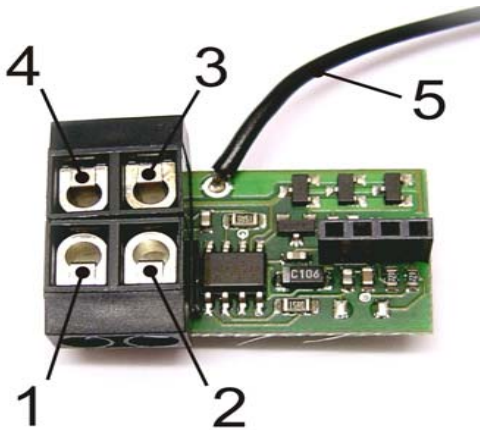
- Measurement of flow rates between 1 and 100 litres per minute (according to type)
- Measurement of medium temperature from 0 to 100°C
- Type VFS....: Output of the measurements as a radiometric voltage
- Type VFS....DL: Output of the measurements using the DL-bus
- Measurement of a second temperature (PT1000 or KTY) by type VFS....DL
- The flow channel contains no moving parts
- Adapter PCB for easy connection to commercial cable cross sections
- Selectable fitting position
- Measurement principle insensitive to contamination and medium properties

Assembly:

The fitting position can be freely selected. A flow calming path is no longer necessary due to the mounting screw coupling. By pulling out the retaining clips, the brass couplings can be pulled out with the feed. When the couplings are reinserted in the sensor part, it is recommended that the sealing rings are lubricated with a little soap to improve the ease of sliding.

Important: The wire (5) projecting from the adapter PCB is to be used with a pipe clamp to make an electrically conducting connection when the sensor is inserted in a pipe made of electrically conducting material.

Type VFS.....:



- 1 Temperature signal
- 2 Flow
- 3 Voltage supply +5 V DC - stabilised
- 4 Sensor and signal earth
- 5 Earth connection to pipeline

Provided there is an available 5V supply voltage, the part can be connected to any analysis unit that has appropriate inputs for processing the output signal voltages.

From version 5.0, the controller **ESR21** makes a +5 V connection available. The S3 input can be parameterised to the volume flow and all other inputs to the temperature signal.

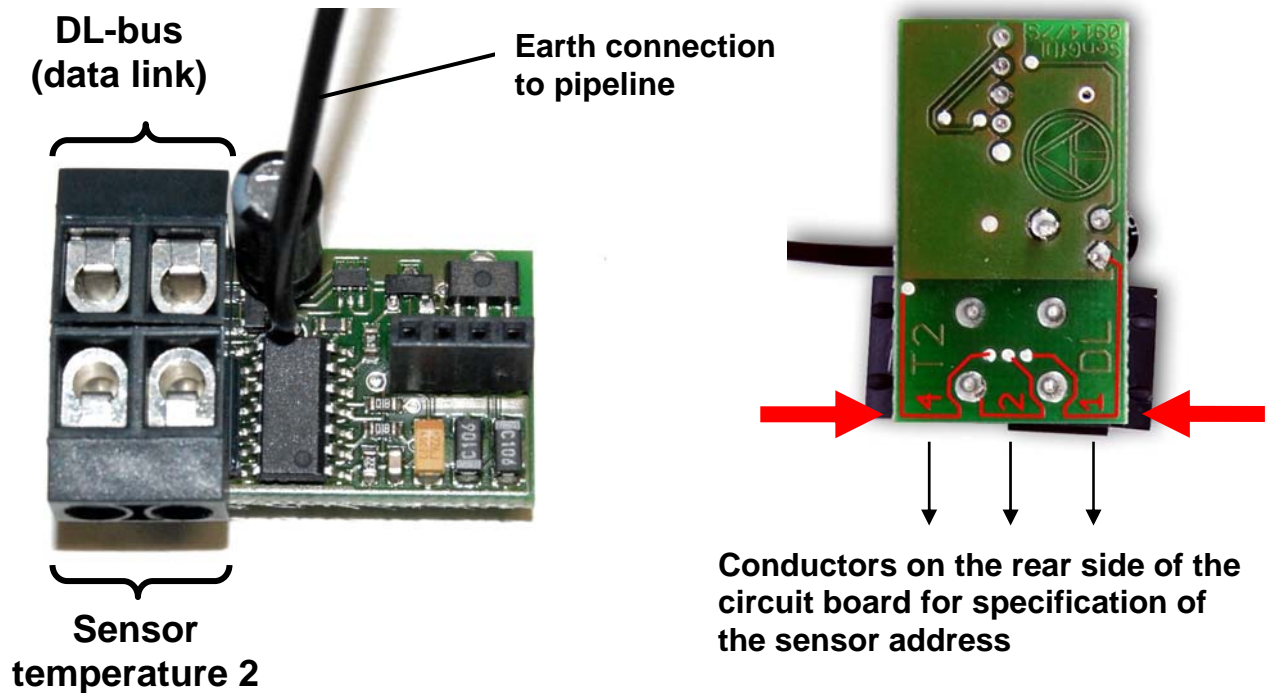
For the controllers **ESR31** (from version 1.0), **UVR61-3** and **UVR63H**, the 0-10V output can be parameterised as a fixed 5V sensor supply value from version 5.0. Any desired input is suitable for the sensor signals.

On the **UVR1611** controller, the 0-10 V output can be parameterised as a fixed 5V value as a sensor supply (from version 2.23). Any desired input is suitable for the sensor signals. However, for the "heat quantity counter" function, the volume flow signal cannot be measured using inputs 15 and 16. Voltage must always be chosen as a measured variable.

Scaling:

Scaling	VFS 1-12 (phased-out type)	VFS 2-40	VFS 5-100 (phased-out type)
Temperature	0,5V 0°C	0,5V 0°C	0,5V 0°C
	3,5V 100°C	3,5V 100°C	3,5V 100°C
Flow	0,25V 0 l/h	0,35V 0 l/h	0,35V 0 l/h
	1,60V 300 l/h	1,95V 1200 l/h	1,15V 1500 l/h

Type VFS....DL:



The supplied adapter 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 input "Temperature 2" on the adapter PCB permits measurement of an additional external temperature. This is only possible for sensors of type PT1000 and KTY (2000 Ohm at 25°C)! The polarity of the connections ("earth") is interchangeable, hence need not be observed.

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 rear side, at the outer edgeboard, close to the screw terminal. 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.

The new address is derived from address 1 (= factory setting) plus the sum of all the disconnected values.

Example: required address 6 = 1 (factory setting) + 1 + 4
= conductors 1 and 4 must be cut.

The **index** of the respective measurements is fixed:

<i>Index:</i>	<i>Measurement:</i>	<i>Sensor type</i>
1	Volume flow [1l/h]	VFS 2-40
2	Temperature [0.1°C]	VFS X-XX, RPS 0-6
3	Temperature 2 [0.1°C]	PT1000
4	Temperature 2 [0.1°C]	KTY
5	Pressure [0.01 bar]	RPS 0-6
6	Volume flow [1l/h]	VFS 1-12 (phased-out type)
7	Volume flow [1l/h]	VFS 1-20
8	Volume flow [1l/h]	VFS 5-100 (phased-out type)

UVR1611: The measurements are parameterised as **analog** network inputs:

network node: address of the sensor
analog network output: index of the measurement
source: DL

The adapter PCB can also be used with other sensor types (see table) and is available independently as 01/SGF-DL.

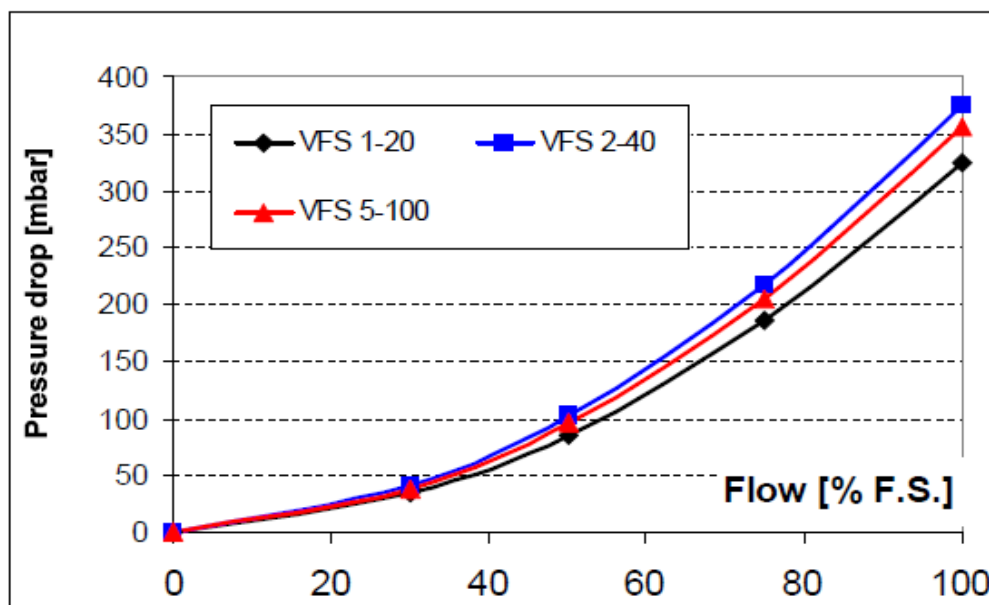
Technical data		VFS 1-12 (phased-out type)	VFS 2-40	VFS 5-100 (phased-out type)
Flow rate	measurement range	1 ... 12 l/min	2 ... 40 l/min	5 ... 100 l/min
	Output voltage ¹	0,25 V ... 3,5 V at +5V ratiometr. ²	0,35V ... 3,5 V at +5V ratiometr. ²	0,35V ... 3,5 V at +5V ratiometr. ²
	accuracy	±3% typical	±1,5% typical	±1,5% typical
Temperature	measurement range	0 ... 100°C	0 ... 100°C	0 ... 100°C
	Output voltage ¹	0,5V ... 3,5V at +5V ratiometr. ²	0,5V ... 3,5V at +5V ratiometr. ²	0,5V ... 3,5V at +5V ratiometr. ²
	accuracy	± 1K (25-80°C)	± 1K (25-80°C)	± 1K (25-80°C)
Bus load (DL-Bus ³)		33%	33%	33%
Operating voltage ¹		+ 5V DC stabilized, max. 10mA	+ 5V DC stabilized, max. 10mA	+ 5V DC stabilized, max. 10mA
Operating temperature range		0°C ... 100°C briefly 120°C	0°C ... 100°C briefly 120°C	0°C ... 100°C briefly 120°C
Pressure loss		approx. 100 mbar at half the rated flow	approx. 100 mbar at half the rated flow	approx. 100 mbar at half the rated flow
Burst pressure		>16 bar	>16 bar	>16 bar
Overall length		110 mm	134 mm	168 mm
Connection thread		¾"	¾"	1"

¹ valid for type VFS2-40, VFS1-12, VFS5-100 (without DL)

² ratiometric: the signal changes in proportion with the supply voltage

³ valid for type VFS2-40DL, VFS1-12DL, VFS5-100DL

Pressure Drop Curves:



We reserve the right to make any technical changes

© 2011