

Turbine Flow Sensor

VTR Series



SIKA VTR Series Turbine Flow Sensor

Extra robust, impressively precise

SIKA's VTR turbine flow sensor allows you to determine precisely, dependably and easily the flow rates of different liquids, such as water and oils, under the most severe conditions.

The VTR sensor is particularly robust and, due to the wide range of nominal diameters and three different pick-ups, can cope with even the most severe conditions.

How it works

The VTR sensor consists of the measuring turbine and a pick-up mounted on the outside.

The liquid flows into the measuring turbine and causes the rotor to move. Due to the characteristic internal diameter the speed of rotation is directly proportional to the flow rate.

The moving rotor blades are detected by the pick-up and this is converted into a pulsed signal proportional to the flow rate.

The characteristic variable is the K-factor (pulses per litre) which is specific to each measuring unit, is determined by calibration and specified on the name plate. A five point calibration report can be supplied on request.

SIKA VTR for use in

- Cooling circuits,
- Petrochemicals,
- Chemical industry,
- Water conditioning,
- Plastics,
- Hydraulics.

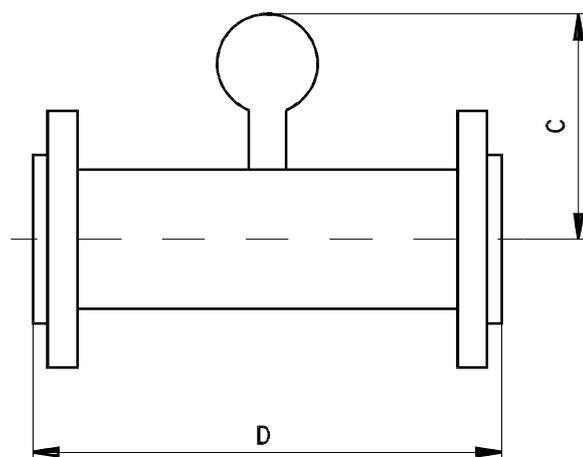
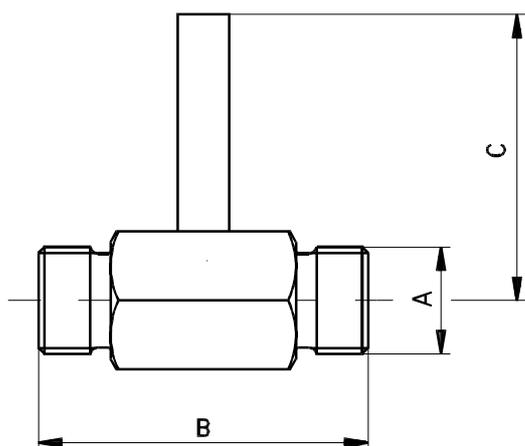


Technical data

General data	
Linearity	± 0,5 % of measured value
Repeatability	± 0,05 % of measured value
Response time	< 50 ms up to DN 40; > 50 ms above DN 300
Process-connections	Flange: DIN, ANSI, others on request, thread (up to DN 50 only): pipe ISO 228 or NPT thread
Pressure drop	280 mbar at 100% measurement range (density 1, viscosity 1 cSt)
Minimum pressure	2 x pressure drop of sensor
Maximum pressure	Threaded connection: 250 mbar Flanged connection: corresponding to flange specification
All figures specified apply to viscosities up to 5 cSt. Higher viscosities on request.	

Materials	
Turbine body	ANSI 304 stainless steel, ANSI 316 optional
Flange	ANSI 105 carbon steel, ANSI 304 or ANSI 316 stainless steel optional
Rotor	VTR 1020-1020: stainless steel SS 316 (18 % Cr 2 % Mo) VTR 1025-1200: stainless steel SS ANC 21 (20 % Cr 2 % Mo)
Bearing support	ANSI 304 stainless steel, ANSI 316 optional
Rotor bearing	Tungsten carbide plain bearing, others (e.g. ball bearings) on request

Flow range and dimensions



Type	Size	Flow range		Dimensions			
		DN	[m ³ /h]	[l/min]	A (ISO 228)	B [mm]	C max [mm]
VTR 1010	10	0,11.....1,1	1,8.....18,3	G ½	64	150	127
VTR 1015-S	15	0,22.....2,2	3,7.....36,7	G ¾	64	150	127
VTR 1015	15	0,4.....4	6,7.....66,7	G ¾	64	150	127
VTR 1020	20	0,8.....8	13,3.....133	G ¾	83	150	140
VTR 1025	25	1,6.....16	26,7.....267	G 1	88	200	152
VTR 1040	40	3,4.....34	56,7.....567	G 1 ½	114	200	178
VTR 1050	50	6,8.....68	113.....1133	G 2	132	200	197
VTR 1075	75	13,5.....135	225.....2250	—	—	200	254
VTR 1100	100	27.....270	450.....4500	—	—	300	356
VTR 1150	150	55.....550	917.....9167	—	—	300	360
VTR 1200	200	110...1100	1833...18333	—	—	350	457
VTR 1250	250	190...1900	3173...31730	—	—	350	457
VTR 1300	300	270...2700	4509...45090	—	—	400	457

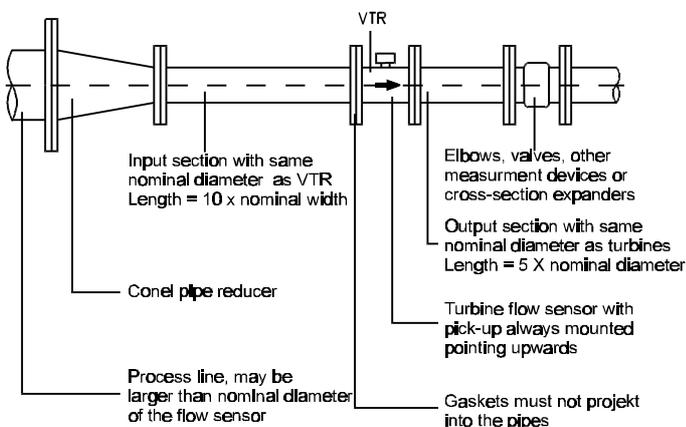
Electronics

A wide range of SIKA display and evaluation units, with and without monitoring, are available for further processing of the signal:

- Programmable flow and volume measuring equipment, display of flow rate and total and choice of various units of measurement. Three programmable alarm contacts for setpoint monitoring. RS 232 C serial interface or 0/4 - 20 mA or 0 - 10 V analogue output.
- Electronic transducer which converts the measurement signal into a standard signal. This allows the following outputs to be selected 0/4 mA - 20 mA and 0 - 10 V .
- Electronic flow monitoring devices with two freely selectable alarm points.
- Microprocessor-controlled batch controller.
- Electronic frequency dividers. Conversion of a high sensor output frequency into a lower frequency for evaluation units.

Installation instructions

Often the best measurement range can only be achieved by selecting a smaller nominal diameter for the turbine flow sensor than that of the process line.



SIKA turbine flow sensor with different process connections



VTR with male threads for nominal diameter DN 10...DN 50



VTR as flanged version for nominal diameter DN 10...DN 300

Three different pick-ups available for the different measurement tasks

VISPP Inductive pick-up coil

- Fitted as standard
- Inexpensive sensor
- Supplies a sinusoidal output signal proportional to the flow rate
- No supply voltage

VIII-2S00/N Inductive proximity sensor

- Output signal, square-wave
- DC-decoupled by optical coupler
- Output signal PNP- or NPN-switching as desired

VILI-2S00/Ex pick-up with MK 13-VP-ExO isolation amplifier



- For use in explosion-hazard area
- Intrinsically safe inductive proximity switch
- Isolation amplifier with intrinsically safe input circuit to be installed outside the explosion-hazard area
- Sensor and amplifier can only be used together

VISPP technical data

Temperature range	-20°C to +120°C
Supply voltage	not necessary
Protection class	IP 54
Electrical connection	Amphenol plug connection MS 10 SL 3102 (supplied)

VIII-2S00/N technical data

Temperature range	-20°C to +120°C
Supply voltage	7 to 30 VDC
Protection class	IP 54
Electrical connection	Connector 09-0430-10-04, connecting lead can be supplied in different lengths

VILI-2S00/Ex technical data

Temperature range	-20°C to +85°C
Supply voltage	from isolation amplifier
Protection class	IP 54
Electrical connection	Connector 09-0430-10-04, connecting lead can be supplied in different lengths
Certificate of conformity	EEx ia IIC



MK 13-VP-ExO isolation amplifier technical data

Input	Frequency signal from VILI-2S00/Ex
Output	PNP frequency signal, short circuit proof, max 100 mA
Supply voltage	10 to 30 VDC
Protection class	IP 20
Display	LEDs: Green: ready Yellow: signal frequency
Enclosure for top-hat rail fitting	Plastic 71 x 18 x 89 (h x w x d)
Certificate of conformity	EEx ia IIC T6...T4