SCHMIDT® Flow Sensor
SS 23.400 ATEX 3

Designated use according to the ATEX directive

In accordance with the ATEX directive 94/9/CE, the flow sensor SS 23.400 ATEX 3 can be used in potentially explosive gas atmospheres. The decisive characteristics of the product are listed below:

- Use in potentially explosive areas due to gas (G)
- Device category 3G, usable in zone 2
- Marking of the device: II 3G Ex nA II T4
- Use only in connection with original cable from **SCHMIDT Technology**

Product description

Thermal flow sensor for measurement in one or two directions of the flow velocity of air and gases with simultaneous detection of the flow direction.
Extremely compact because electronics are integrated in the sensor tube. Sensor element located in the chamber head and protected against mechanical load. Linear analog output to indicate the measurement values, two switching outputs to output the flow direction and the signal of the threshold value. An optional programming kit (RS232 with Windows PC) allows on-site the configuration of the sensor, with additional indication of temperature and flow quality (degree of turbulence) of the medium.
When installed in a measuring tube, it is suitable for the measurement of the standard volumetric flow.

Application

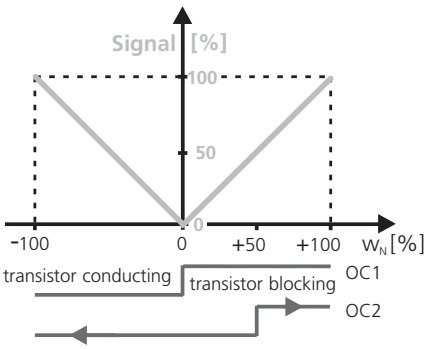
- Laminar-flow monitoring in cleanrooms
- Monitoring of room cross-flow
- Cooling air monitoring
- Flow measurement in test benches
- Mass flow and volume flow measurement
- Use in potentially explosive areas due to gas (zone 2)

Product advantages

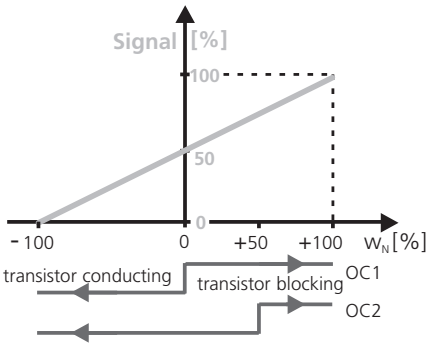
- Bidirectional measurement
- Precise detection of direction
- Very low beginning of measuring range
- Very fast response
- No intrinsic safe power supply, Zener barrier etc. necessary
- Easy single-hole mounting
- Switching outputs
- Self-monitoring
- Assessment of flow quality

Display of analog and digital signals

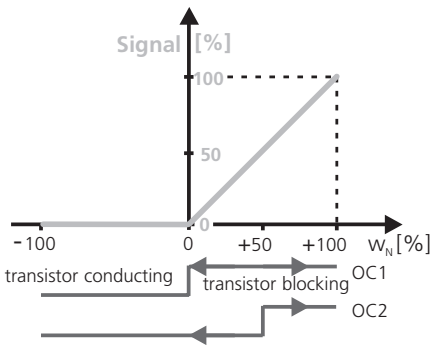
Bidirectional
direction display: swiching output OC1



Bidirectional
direction display: 0 m/s = 50 % signal



Unidirectional
direction display: none



Note: In an unidirectional design, the switching output OC1 is used as a flow indicator by default (configurable).
It indicates a flow greater than 0 m/s by blocking and switches through in case flow is smaller or equal 0 m/s.
The arrows in the figure of the switching outputs signify that the threshold value is configurable.

Form 1076/12/08/1500/6 · Art. No. 514 621.02 · B · Data subject to change

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SCHMIDT® Flow Sensor
SS 23.400 ATEX 3

Technical data

Measuring quantity	standard velocity w_N of air, relative to standard conditions 20 °C and 1013.25 hPa
Medium to be measured	clean air or nitrogen more gases on request
Measuring range w_N	0 ... 1 m/s 0 ... 2.5 m/s 0 ... 5 m/s 0 ... 10 m/s 0 ... 20 m/s unidirectional or bidirectional
Lower detection limit	0.05 m/s
Measuring inaccuracy	±(3 % of measuring value + 0.4 % of final value); min. ±0.05 m/s
Repeatability	± 2 % of measuring value
Response time t_{90}	0.01 ... 10 s (configurable)
Storage temperature	-20 ... +85 °C
Operating temperature	0 ... +60 °C
Humidity range	0 ... 95 % rel. humidity (RH)
Operating pressure	700 ... 1300 hPa
Operating voltage U_B	7.5 ... 24 V DC (+ 10 %) [1]
Current consumption	typical < 10 mA (without electrical load)
Analog output	current ($R_L \leq 300\ \Omega$): 0 / 4 ... 20 mA voltage ($R_L \geq 10\ k\Omega$): 0 ... 2 / 5 / 10 V
Switching outputs - Signalizing - Type - Electrical data - Threshold value - Switching hysteresis - Configuration	OC1 and OC2 OC1: direction or threshold value OC2: threshold value open-collector, current-limited and short-circuit-proof $U_{S,max}$ = 26.4 V DC, $I_{S,max}$ = 65 mA 0 ... 100 % of end value; min. (±) 0.05 m/s 5 % of switch threshold; min. 0.05 m/s via RS232 (programming kit)
Electrical connection	outlet M9, 7-poles, type: male connector
Line length	15 m max. (voltage output) 100 m max. (current output)
Protection type	IP 67 (housing) IP 67 (plug-in connector)
Mounting	by means of a mounting flange (see accessories)

Dimensions / material		
- Sensor probe	∅ 9 mm x 10 mm	anodised aluminium
- Sensor tube	∅ 9 mm x L	stainless steel 1.4571
- Probe length L	130 / 200 / 300 mm	
- Plug-in connector	∅ 14 mm x 40 mm	stainless steel 1.4571
- Knurled screw for plug	∅ 14 mm x 5,5 mm	CuZn, nickel-plated

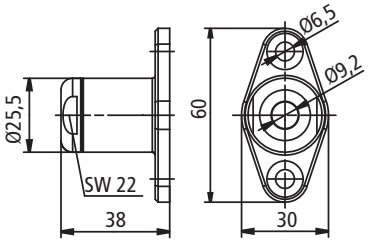
Weight	about 60 g (with 300 mm probe length)

Dimensional drawing

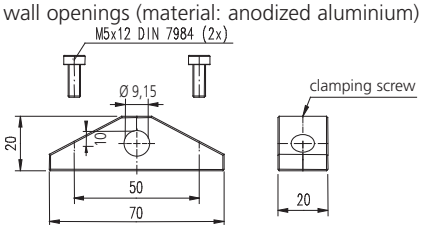
Accessories

Connecting cable (shielded) with coupler socket M9, 7-pin, cable length: 2 m / 5 m / 10 m	505 911 -1 / -2 / -3
Programming kit, suitable for PC's with Windows 2000 or XP and with RS232 interface	505 960
Extension cable between programming kit and sensor	506 944
ISO Calibration Certificate	506 247 – xx

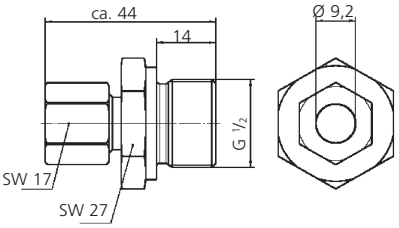
Wall-mounting flange
For mounting on walls through wall openings
(material: stainless steel 1.4571, PTFE) 520 181



Wall-fixture for mounting in front of
wall openings (material: anodized aluminium) 503 895



Trough bolt joint (G ½") for gas-tight mounting
in tubes and channels (material:
stainless steel 1.4571, clamping ring PTFE) 301 082



Order information

Article No.	Mounting length		Measuring range		Measurement		Output		Indication of direction		Connecting cable		Programming	
513 970-XYDZRA-P	X	L	Y	w_N	D	direction	Z		R		A		P	
	1	130 mm	1	0 ... 1 m/s	1	unidirectional	1	0 ... 10 V	1	OC1 = direction signal	1	2 m	S	standard
	2	200 mm	2	0 ... 2.5 m/s	2	bidirectional	2	0 ... 5 V	2	analog signal includes	2	5 m	K	customized
	3	300 mm	3	0 ... 5 m/s			3	0 ... 2 V		direction:	3	10 m		
			4	0 ... 10 m/s			4	0 ... 20 mA [2]		0 m/s = 50 % signal				
			5	0 ... 20 m/s			5	4 ... 20 mA [2]	3	unidirectional	4	none [3]		

Note: Response time, threshold values (OC1 / OC2) and switching polarity can be changed using the optional programming kit or can be preprogrammed by **SCHMIDT Technology** (P = K).
[1] For the analog output with 0 ... 10 V and for the current interface, the minimum voltage is $U_{B,min}$ = 12 V.
[2] Current output versions are not available with L = 130 mm.
[3] To meet ATEX directives **SCHMIDT® connection cable** is mandatory.