



**SCHMIDT[®] Flow Sensor
SS 20.400
Instructions for Use**

SCHMIDT[®] Flow Sensor

SS 20.400

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1 Important Information

These instructions for use must be read completely and observed carefully, before putting the unit into operation.

Any claims under the manufacturer's liability for damage resulting from non-observance or non-compliance with these instructions will become void.

Tampering with the device in any way whatsoever - with the exception of the designated use and the operations described in these instructions for use - will forfeit any warranty and exclude any liability.

The unit is designed exclusively for the use described below (s. chapter 2). In particular, it is not designed for direct or indirect personal protection.

SCHMIDT Technology cannot give any warranty as to its suitability for a certain purpose and cannot be held liable for errors contained in these instructions for use or for accidental or sequential damage in connection with the delivery, performance or use of this unit.

2 Field of Application

The SCHMIDT® flow sensor SS 20.400 has been designed for stationary use in cleanrooms, air ducts or air shafts under atmospheric pressure conditions.

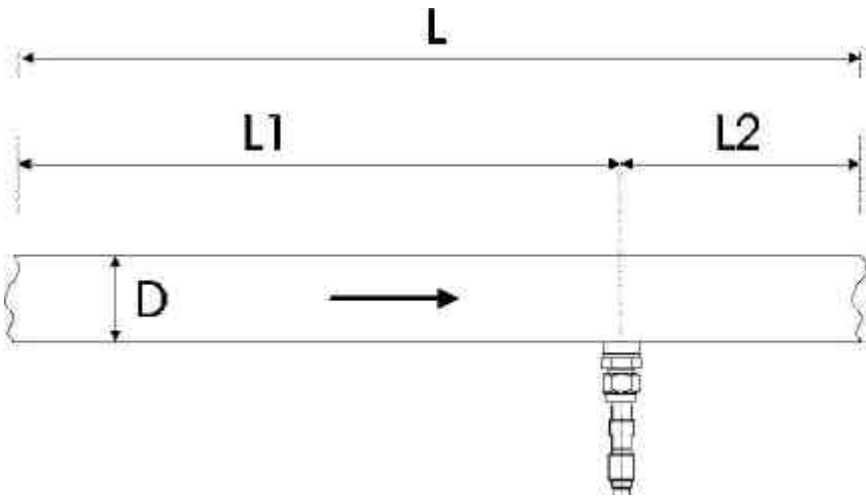
The sensor measures the flow velocity of the measuring medium as standard velocity (unit m/s), relative to the standard pressure of 1013.25 hPa and the standard temperature of 20°C. The output signal is linear and independent of the pressure and temperature of the medium. When mounting the sensor in a tube, the output signal of the flow velocity can be used to calculate the standard volumetric flow or the mass flow of the medium.

3 Mounting Information

Pipe-bound flow

To reach the accuracy specified in the data sheets, the sensor has to be positioned in a straight conduit and at a place with undisturbed flow profile. An undisturbed flow profile can be achieved if a sufficiently long distance in front of the sensor (run-in distance) and behind the sensor (run-out distance) is held absolutely straight and without disturbances (such as edges, seams, bends, etc.).

The design of the run-out distance is also important, since disturbances act not only **in** the direction of the air flow but also lead to turbulence **opposite** to the flow direction.



L = Total length of the measuring distance, $L1$ = length of the run-in distance, $L2$ = length of the run-out distance, D = diameter of the measuring distance

The following table shows the necessary straight conduit lengths as a function of the pipe diameter D for various disturbances.

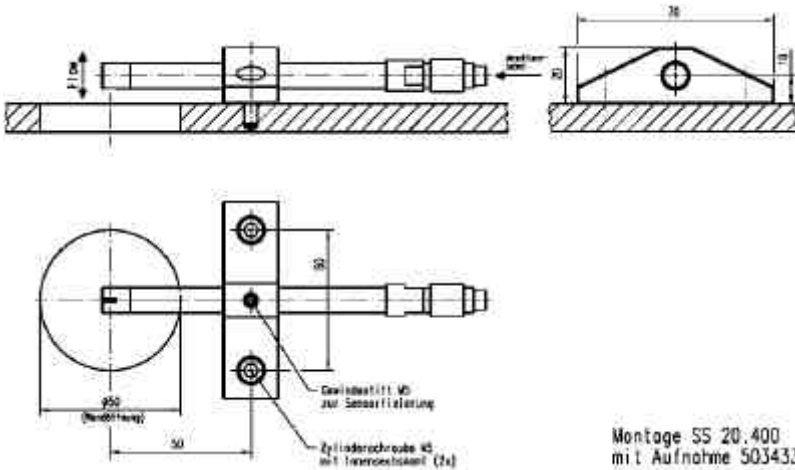
Table of run-in and run-out distances

Flow obstacle upstream of the measuring conduit	Minimum length of the run-in distance (L1)	Minimum length of the run-out distance (L2)
Light bend (< 90°)	10 x D	5 x D
Contraction (conduit contracts toward the measuring area)	15 x D	5 x D
Expansion (conduit expands toward the measuring area)	15 x D	5 x D
90° bend or T-junction	15 x D	5 x D
Two 90° bends in one plane (2-dimensional)	20 x D	5 x D
Two 90° bends with 3-dimensional change in direction	35 x D	5 x D
Shut-off valve	45 x D	5 x D

This table lists the **minimum values** required in each case. If the listed straight conduit lengths cannot be achieved, the measurement accuracy may be impaired.

Mounting as overflow sensor

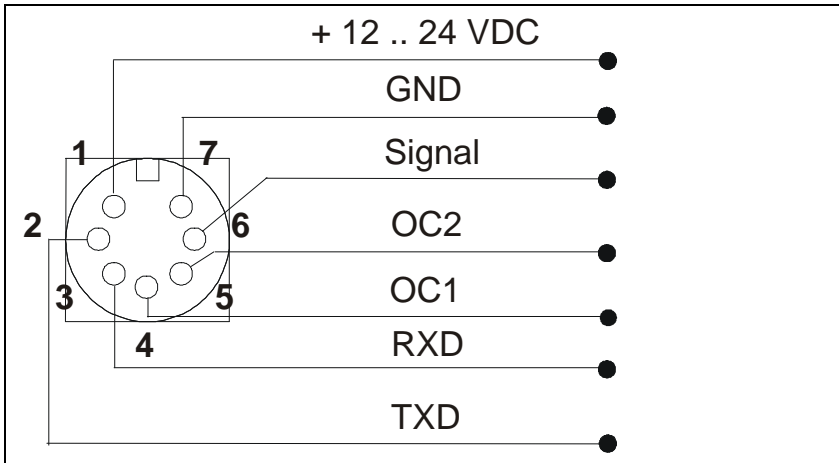
For mounting as overflow sensor, the mounting bracket 503433 is used. Ideally the sensor is attached in the direction of flow behind the hole. The sensor tip must be in the centre of the opening.



Mounting position

The sensor is substantially independent of the mounting position.

4 Electrical Connections



Connection assignment SS 20.400
View of the plug pins at the sensor

Round connector type: Binder (series 712)

All signals use GND as common earth. The analog output has been designed as passive current sink.

Attention: Only operate the sensor in the defined range of operating voltage (12 .. 24 VDC). Undervoltage may result in malfunction. Overvoltage may lead to irreversible damage of the sensor.

5 Putting into Operation

The sensor is ready within 5 sec after switch-on. If the sensor has a temperature different from that of the place of use, this time will increase until the sensor has reached ambient temperature.

The communication with the RS232 interface can break down when the communication is maintained over a longer period of time. Changes in temperature of about 10°C during communication will result in a breakdown as well. In this case, the sensor should be disconnected from the power supply and the communication established again.

Attention: Do not plug in or pull the sensor with the supply voltage switched on.

6 Service Information

Service

Soiling of the sensor tip will reduce the measuring accuracy. Therefore, the sensor tip must be checked regularly for soiling. When heavily soiled, the sensor will output an error signal (analog output = 2 mA). If this is the case, clean the sensor carefully (see below). If the error signal does not disappear, the sensor must be sent in to the manufacturer for servicing.

Cleaning the sensor tip

The sensor tip can be cleaned carefully with compressed air to remove dust/soiling. Resilient soiling can be removed by rinsing the sensor tip carefully with alcohol (e.g. isopropanol). Do not try to clean the sensor tip by mechanical means of any type.

Do not use strong cleaners, solvents, brush or other hard objects for cleaning!

Do not shake a wet sensor.

Recalibration

If the customer has made no other provisions, we recommend repeating the calibration at a 12-month interval. To do so, the sensor must be sent in to the manufacturer.

Spare parts or repair

No spare parts are available, since a repair is only possible at the manufacturer's. In case of defects, the sensors must be sent in to the supplier for repair.

When the sensor is used in systems important for operation, we recommend keeping a replacement sensor in stock.

Test certificates and material certificates

No certificates are necessary for this sensor. Upon request, we shall prepare a calibration certificate according to ISO 9001, traceable to national standards, at a charge.

SCHMIDT Technology GmbH

Feldbergstrasse 1

D-78112 St. Georgen

Phone +49 (0)7724/899-0

Fax +49 (0)7724/899-101

info@schmidttechnology.de

www.schmidttechnology.de