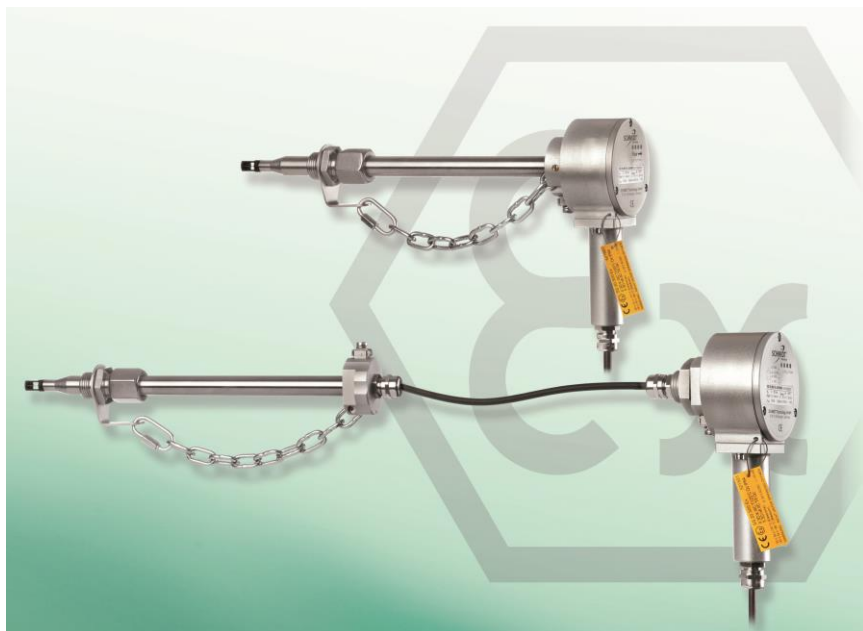


Simply a question of  
**better measurement**



## SCHMIDT® Flow Sensor SS 20.600 Ex

- Supplementary instructions for use  
in explosive atmospheres ATEX

# SCHMIDT® Flow Sensor

## SS 20.600 Ex – ATEX version

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Imprint:  
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Version: 535698.02A  
Subject to modifications

# 1 Important information

The present instructions for use contain all ATEX specific information for fast commissioning and safe operation of the version of **SCHMIDT® flow sensor SS 20.600 Ex** suitable for ATEX:

- Please also read the "Instructions for use SS 20.600" (material no.: 535084.02) and the "Brief instructions" (material no. 536020.02) because the present instructions for use are supplementary instructions for use in explosive atmospheres.
- 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 (refer to *chapter 4*). In particular, it is not designed for direct or indirect protection of personal or machinery.
- **SCHMIDT Technology** cannot give any warranty as to its suitability for a certain purpose and cannot be held liable for accidental or sequential damage in connection with the delivery, performance or use of this unit.

Other instructions for assembly, commissioning, maintenance and disassembly can be found in the general instructions for use (material no.: 535084.02) of the **SCHMIDT® flow sensor SS 20.600**.

## Symbols used in this manual

The symbols used in this manual are explained in the following section.



**Danger warnings and safety instructions - please read and them!**

Non-observance of these instructions may lead to injury of the personnel or malfunction of the device.



**Risk of explosion - read carefully!**

Important instructions for use in areas subject to explosion hazards.

## **2 Storage and transport**

### **Packaging**

The device is protected by its packaging. The packaging is environmentally safe and recyclable. Basically, the following materials are used:

- cardboard box
- polyethylene foam or polyethylene film

Dispose of the available packaging parts by submitting it to a recycling company.

### **Conditions for storage and transport**

The following points must be observed to avoid damage:

- Do not expose the device to excessive mechanical load, such as throwing, stacking, falling etc.
- Do not use the device in areas with high humidity or rain.
- Do not expose the device to direct sun radiation for a long time.
- Before transport or shipment of the sensor, the delivered protective cap must be placed onto the sensor tip.
- The storage temperature must not be lower than -20 °C or higher than +85 °C.

### 3 Safety instructions for explosive atmospheres

- The ATEX version of the **SCHMIDT flow sensor SS 20.600 Ex** is only suitable for the following applications:
  - in *explosive gas* atmospheres: Zone 2
- The compliance with the important explosion protection data of your application must be ensured by appropriate labeling.
  - G = Gas
  - Device categories 1, 2, 3 in 3 zones
  - Gas values: Temperature class (T1 ... T6)
- Prior to carrying out operations such as assembly or electrical connection, make sure that:
  - the *operation approval* of the owner is available
  - there is no *explosive atmosphere*
  - the device is *disconnected from the mains*
  - the device cannot be *switched on inadvertently*
- Avoid dust deposits (installation position, protection, cleaning measures...) in order to prevent dangerous increase of the surface temperature.
- Installation, commissioning and periodic checks must be carried out by qualified personnel only ("qualified person" according to TRBS, Technical Rules for Operational Safety, 1203).
- Repair work must be carried out by the manufacturer only.
- Changes to the device are not allowed and can cause the risk of explosion (ignition).
- Only original accessories by the manufacturer must be used.



The following standards and rules are relevant:

- EN 1127-1: Explosion prevention and protection - Basic concepts and methodology
- TRBS series
- Standards for explosive gas atmospheres ("G"):
  - EN 60079-10: Classification of explosive atmospheres
  - EN 60079-14: Electrical apparatus for explosive atmospheres
  - EN 60079-17: Inspection and maintenance

## 4 Application range

The ATEX version of the category 3 **SCHMIDT® flow sensor SS 20.600 Ex** is designed for stationary measurement of the flow velocity as well as the air and gas temperature in potentially explosive atmospheres with the following types of protection for:



- Gases (Zone 2) : II 3G Ex nA ic IIC T4 Gc

The permissible operating temperatures are:

- Electronics : -20 ... +70 °C
- Sensor: -40 ... +120 °C (depending on the version)

More technical data are given in the general "Instructions for use SS 20.600" (material no.: 535084.02).

## 5 Mounting instructions

Prior to the assembly in explosive atmospheres, the following safety measures must be observed:

- Check if the device category corresponds to the specified zones.
- Check if the operation approval of the operator is available.
- Check if there is an explosive atmosphere during assembly, maintenance, etc.
- Compliance with the applicable regulations and the entire relevant documentation for this device.



### ATEX-relevant operating conditions

#### Pressure-tight accessories



Only use suitable, pressure-tight accessories if media separation is required.

Observe the pressure safety measures.

#### Opening the housing



It is not allowed to open the housing (sealed housing screws). Unauthorized opening of the housing renders the explosion protection null and void!

#### Remote version



The connecting cable between the sensor and the housing includes intrinsically safe circuits. It is already connected ex works and must not be disconnected or modified in any way.

### Mounting the ground or equipotential bonding conductor

The metallic enclosure of the sensor must be connected to grounding or equipotential bonding according to EN 60079-0.

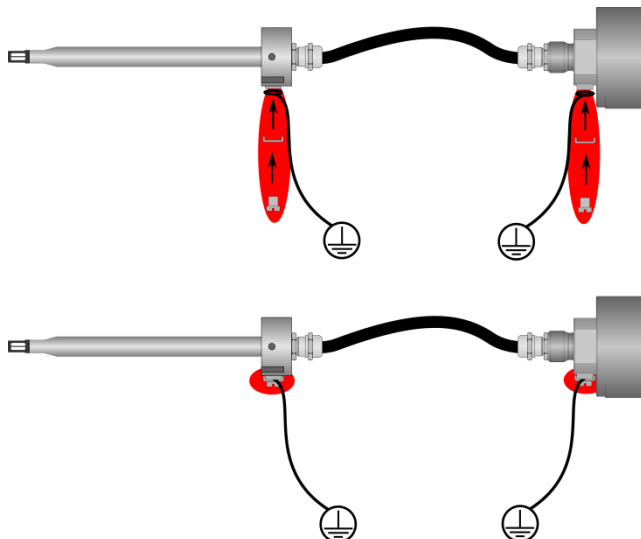
The cable required for this must be fastened at the terminal screw of the enclosure, for the remote version also at the sensor.

In general the following applies to grounding:

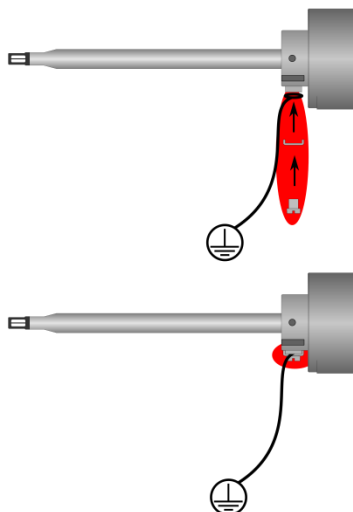


- The external ground connection on the enclosure must be connected to the equipotential bonding of the hazardous area with low resistance.

- No equipotential current must flow between the hazardous area and non-hazardous area.
- Minimum cable cross-section:  $1 \times 4 \text{ mm}^2$
- The screw must be tightened firmly at the terminal so that the conductor cannot be loosened or twisted.



**Figure 5-1 Grounding contacts (red), remote version**



**Figure 5-2 Grounding contacts (red), compact sensor**



## 6 Electrical connection and protective sleeve assembly

The electrical connection is realized by means of a special connecting cable only available at **SCHMIDT Technology** (material no.: 524921 or 524942 and 524929) that can be purchased as additional optional accessory.

### Connecting cable



The sensor must be operated only with the original connecting cable by **SCHMIDT Technology** (optional accessory). Otherwise, the ATEX compliance is null and void.

Other electrical accessories, such as Zener barriers or intrinsically safe power supplies, are not required for ATEX operation.

In general the following applies:



Make sure that no operating voltage is active during electrical installation and that the operating voltage cannot be switched on inadvertently.

This applies in particular to disassembly of the sensor.



### WARNING!

DO NOT DISCONNECT THE CONNECTING CABLE FROM THE SENSOR UNDER VOLTAGE!



### WARNING!

DO NOT OPEN PROTECTIVE SLEEVE UNDER VOLTAGE!

It is recommended to connect, first, the connecting cable on the field side (first, connect the protective sleeve to the cable, see the following description).

The connection on the sensor side is realized by means of a plug-in connector to be mounted subsequently, it must be protected against impacts and UV radiation by means of a protective sleeve with cable entry (1 x M12) included in the delivery (for assembly procedure refer to Figure 6-1).

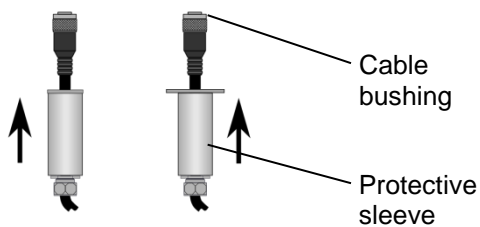
### Protective sleeve for plug-in connector



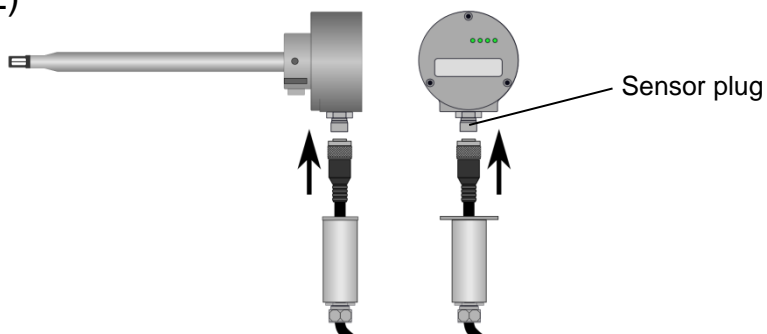
Must be mounted!

If the protective sleeve is not mounted properly, the explosion protection is not available!

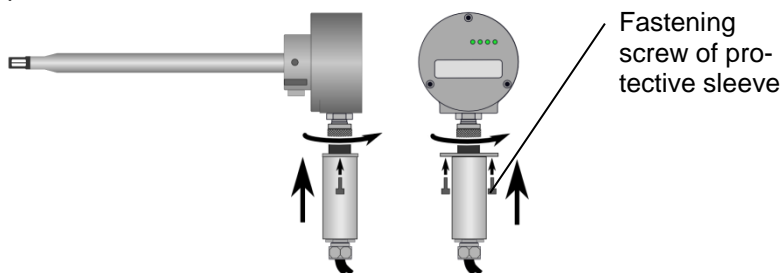
(1)



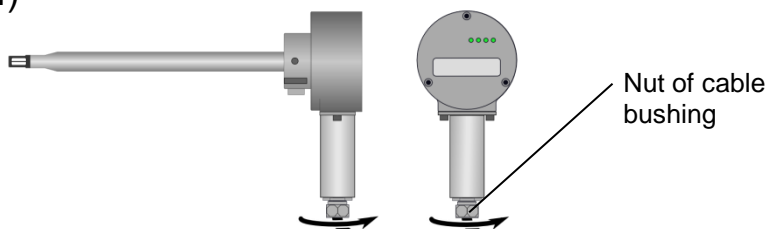
(2)



(3)



(4)



**Figure 6-1 Assembly of the connecting cable with protective sleeve**

## Assembly (see Figure 6-1):

- (1) Insert the open end of the connecting cable into the protective sleeve (unscrew the screw of the cable bushing) and push it right up to the cable connector.
- (2) Insert the cable connector into the plug of the sensor housing and tighten the spigot nut manually.
- (3) Put the protective sleeve on the plug-in connector and fasten it by means of the enclosed screws (hexagon sockets 2.5 mm; do not forget the snap rings) on the housing.
- (4) Tighten the nut of the cable bushing (7 Nm).

## 7 Type plate

The type plate for labeling according to the standards is fixed at the sensor by means of a wire loop.

If required, the customer can attach this plate at another place as long as its subject (the sensor) can be identified clearly and it is legible and undetachable. Examples are:



- Mounting it directly at the sensor, e.g. by means of machine screws through the fixing hole.
- Attaching on the adjacent wall next to the sensor or similar according to EN 60079-0, chapter 29.6.
- The side with the warning note "Do not disconnect under voltage" must remain visible.

## 8 Declaration of conformity

### EU-Declaration of conformity



SCHMIDT Technology GmbH herewith declares that the product

**SCHMIDT® Flow Sensor SS 20.600 Ex**

Part-No. **524 600** – (Ordering code: **A B C D E F 2 H P P**)

is in compliance with the following European guidelines:

**No.: 2014/30/EU**

**Text:** Directive 2014/30/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to **electromagnetic compatibility (EMC)**

The following European standards were used for assessment of the product therefore:

- Emission (residence): **EN 61000-6-3: 2007/A1:2011/AC:2012**
- Emission (industrial): **EN 61000-6-2: 2006+A1:2011**

**No.: 2014/34/EU**

**Text:** Directive 2014/34/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to **equipment and protective systems intended for use in potentially explosive atmospheres (ATEX)**

The following European standards were used for assessment of the product therefore:

- Equipment category „3G“: **EN 60079-0:2012 + A11:2013**  
**EN 60079-11:2012**  
**EN 60079-15:2010**

- Designation:



**II 3G Ex nA ic IIC T4 Gc**

For assessment of the product for compliance with the directive the following notified body was included:

- IBExU Institut für Sicherheitstechnik GmbH  
Identification no.: **0196**  
Fuchsmühlenweg 7  
D-09599 Freiberg
- Type Examination Certificate: **IBExU12ATEXB027 X**

Further requirements of this directive apply for production and marketing of this device. This product will be produced using a quality assurance system – internal production control (attachment VIII).

This declaration certifies the compliance with the mentioned directives but comprises no confirmation of attributes. The security advices of the included product documentation have to be observed. The above mentioned product was tested in a typical configuration.

St. Georgen, 20.04.2016

A handwritten signature in blue ink, appearing to read 'Helmar Scholz'.

Helmar Scholz  
Head of R&D Division Sensors

SCHMIDT Technology GmbH  
Feldbergstraße 1  
78112 St. Georgen  
Germany

Phone +49 (0) 77 24 / 89 90  
Fax +49 (0) 77 24 / 89 91 01  
Email [sensors@schmidttechnology.de](mailto:sensors@schmidttechnology.de)  
Internet [www.schmidt-sensors.com](http://www.schmidt-sensors.com)

# 9 Type Examination Certificate

## IBExU Institut für Sicherheitstechnik GmbH An-Institut der TU Bergakademie Freiberg

### [1] TYPE EXAMINATION CERTIFICATE (Translation)



[2] for electrical equipment of the Equipment Group II, Category 3

[3] Type Examination Certificate Number: **IBExU12ATEXB027 X**

[4] Equipment: **Flow Sensor**  
Type SS 20.600 Ex

[5] Manufacturer: **SCHMIDT Technology GmbH**

[6] Address: **Feldbergstr. 1**  
**78112 St. Georgen / Schwarzwald**  
**GERMANY**

[7] The design of the equipment mentioned under [4] and any acceptable variation thereto are specified in the schedule to this Type Examination Certificate.

[8] IBExU Institut für Sicherheitstechnik GmbH certifies that the equipment mentioned under [4] has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of the equipment intended for use in potentially explosive atmospheres given in Annex II to the Directive.  
The test results are recorded in Test Report IB-11-4-013 of 18 December 2012.

[9] Compliance with the Essential Health and Safety Requirements has been assured by compliance with EN 60079-0:2009, EN 60079-11:2012 and EN 60079-15:2010.

[10] If the sign "X" is placed after the certificate number and the marking under [12], it indicates that the equipment is subject to special conditions for safe use specified under [17] in the schedule to this Type Examination Certificate and in the Operating Instruction.

[11] This Type Examination Certificate relates only to the design and construction of the specified equipment. Further requirements of this Directive apply to the manufacture and supply of this equipment.

[12] The marking of the equipment mentioned under [4] shall include the following:

**II 3G Ex nA ic IIC T4 Gc X**  
-20 °C ≤ T<sub>a</sub> ≤ +70 °C

IBExU Institut für Sicherheitstechnik GmbH  
Fuchsmühlenweg 7 - 09599 Freiberg, GERMANY  
☎ +49 (0) 3731 3805-0 - ☎ +49 (0) 3731 23650

Freiberg, 18 December 2012

By order

(Dr. Wagner)

**IBExU**  
Institut für Sicherheitstechnik GmbH  
An-Institut der TU-Bergakademie Freiberg  
Fuchsmühlenweg 7  
09599 Freiberg/Sachsen  
Tel. (0 37 31) 38 05-0 • Fax 2 36 50

- Stamp -

Certificates without signature and stamp are not valid.  
Certificates may only be duplicated completely and unchanged. In case of dispute, the German text shall prevail.

Schedule

[13]

**Schedule**

[14]

**to TYPE EXAMINATION CERTIFICATE IBExU12ATEXB027 X**

[15]

**Description**

The flow sensor is of the stationary measuring flow rate and temperature of the gaseous media. The devices are intended for use in hazardous areas requiring Category 3G equipment provided. The sensor probe which is in contact with the medium is operated in an intrinsically safe circuit.

Technical data

Ambient temperature enclosure:	-20 °C up to +70 °C
Medium temperature sensor probe:	-40 °C up to +120 °C
Degree of protection of the enclosure:	IP 65 in accordance with EN 60529
Sensor:	IP 67 in accordance with EN 60529

**Electrical data**

Rated voltage:	24 V DC $\pm$ 20 %
Current consumption:	$\leq$ 250 mA
Current output:	4-20 mA
Voltage output:	0-10 V
Pulse output:	0-100 Hz $U_{max}$ 28.8 V DC $I_{max}$ 100 mA
Relay output (contactless):	0-100 Hz $U_{max}$ 30 V DC/ 21.8 V AC $I_{max}$ 50 mA

[16]

**Test Report**

The test results are recorded in the Test Report IB-11-4-013. The test documents are part of the Test Report and listed there.

**Summary of test results:**

The flow sensor type SS 20.600 Ex fulfills the requirements of explosion protection for electrical equipment of the Equipment Group II and Category 3G in type of protection "nA" non-sparking device with an internal current in type of protection Intrinsic safety "Ic" for explosion group IIC an temperature class T4.

[17]

**Special conditions for safe use**

- The internal intrinsically safe circuit is isolated up to 30 V from the case.
- There is a power supply for protection class III (SELV or PELV).

[18]

**Essential health and safety requirements**

Confirmed by compliance of norms (see [9]).

By order

Freiberg, 18 December 2012

  
(Dr. Wagner)



**SCHMIDT Technology GmbH**

Feldbergstrasse 1  
78112 St. Georgen

Germany

Phone +49 (0)7724 / 899-0

Fax +49 (0)7724 / 899-101

Email [sensors@schmidttechnology.de](mailto:sensors@schmidttechnology.de)

URL [www.schmidt-sensors.com](http://www.schmidt-sensors.com)