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**better measurement**



**SCHMIDT® Flow Sensor**

**SS 20.500 Ex**

**– Supplementary instructions for use  
in explosive atmospheres ATEX**

**Instructions for Use**



# SCHMIDT<sup>®</sup> Flow Sensor

## SS 20.500 Ex – ATEX version

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# 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 SS20.500 Ex** suitable for ATEX.

- Please also read the "Instructions for use SS 20.500" (material no.: 523375.02) as 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 (see *chapter 4*). In particular, it is not designed for direct or indirect protection of personal and machinery.
- **SCHMIDT Technology** cannot give any warranty as to its suitability for 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.: 523375.02) of the **SCHMIDT® Flow sensor SS 20.500**.

## Symbols used in this manual

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



### **Danger warnings and safety instructions - Read carefully!**

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 Transport and storage**

### **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 transport and storage**

The following points must be observed in order to prevent damage:

- Do not expose the device to excessive mechanical load, such as throwing, stacking, falling etc.
- Do not use the device in environments where humidity and rain is possible.
- Do not expose the device to direct sunlight 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 **SCHMIDT flow sensor SS 20.500 Ex** is only suitable for the following applications:
  - in *explosive dust* atmospheres: zone 22
  - in *explosive gas* atmospheres: zone 2
- The important explosion protection data indicated on the label of the product must be observed:
  - G = Gas, D = Dust
  - Device categories 1, 2, 3 in the 3 zones
  - Gas specific values:
    - Temperature class (T1...T6)
  - Dust specific values:
    - Conductive and not conductive
    - Surface temperature with regard to smoldering temperature (less 75 °C) and ignition temperature (2/3); the smaller value applies



- Prior to carry 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 useful:

- 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

Standards for explosive dust atmospheres ("D"):

- EN 61241-10: Classification of explosive dust atmospheres
- EN 61241-14: Selection and installation
- EN 61241-17: Inspection and maintenance

## 4 Application range

The ATEX version of the category 3 **SCHMIDT® flow sensor SS 20.500 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 IIC T4 Gc
- Dusts (Zone 22): II 3D Ex tc IIIC T125°C Dc IP64



The sensor is suitable only for use in atmospheres with combustible, conductive dust with smoldering temperature higher than 210 °C.

The permissible operating temperatures are:

- Electronics : -20 ... +70 °C
- Sensor: -40 ... +85 °C

More technical data can be found in the general "Instructions for use SS 20.500" (material no.: 523375.02).

## 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 from the owner 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 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.

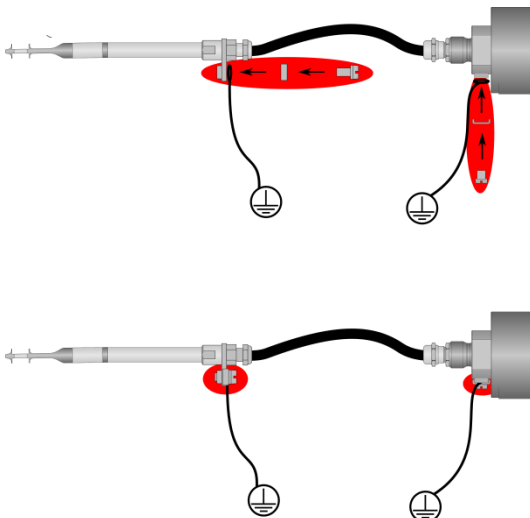
In general the following applies to grounding:



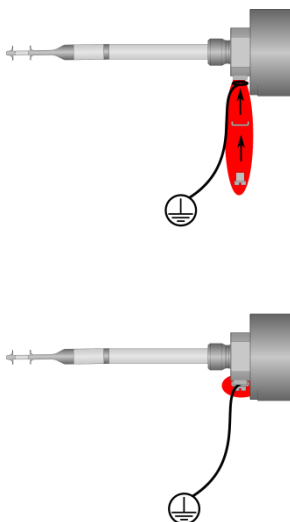
- The external ground connection on the enclosure must be connected to the equipotential bonding of the hazardous area with low resistance.
- No equipotential current must flow between the hazardous

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

Electrical connection is realized via a special connecting cable only available at **SCHMIDT Technology** (material no.: 523565 or 523566) 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 suitability is null and void.

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

In general the followings apply:



During electrical installation ensure that no voltage is applied and inadvertent activation is not possible.

This applies in particular when disassembling the sensor.



### **WARNING!**

**DO NOT DISCONNECT CONNECTING CABLE AND SENSOR WHEN THEY ARE UNDER VOLTAGE!**



### **WARNING!**

**DO NOT OPEN PROTECTIVE SLEEVE UNDER VOLTAGE!**

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

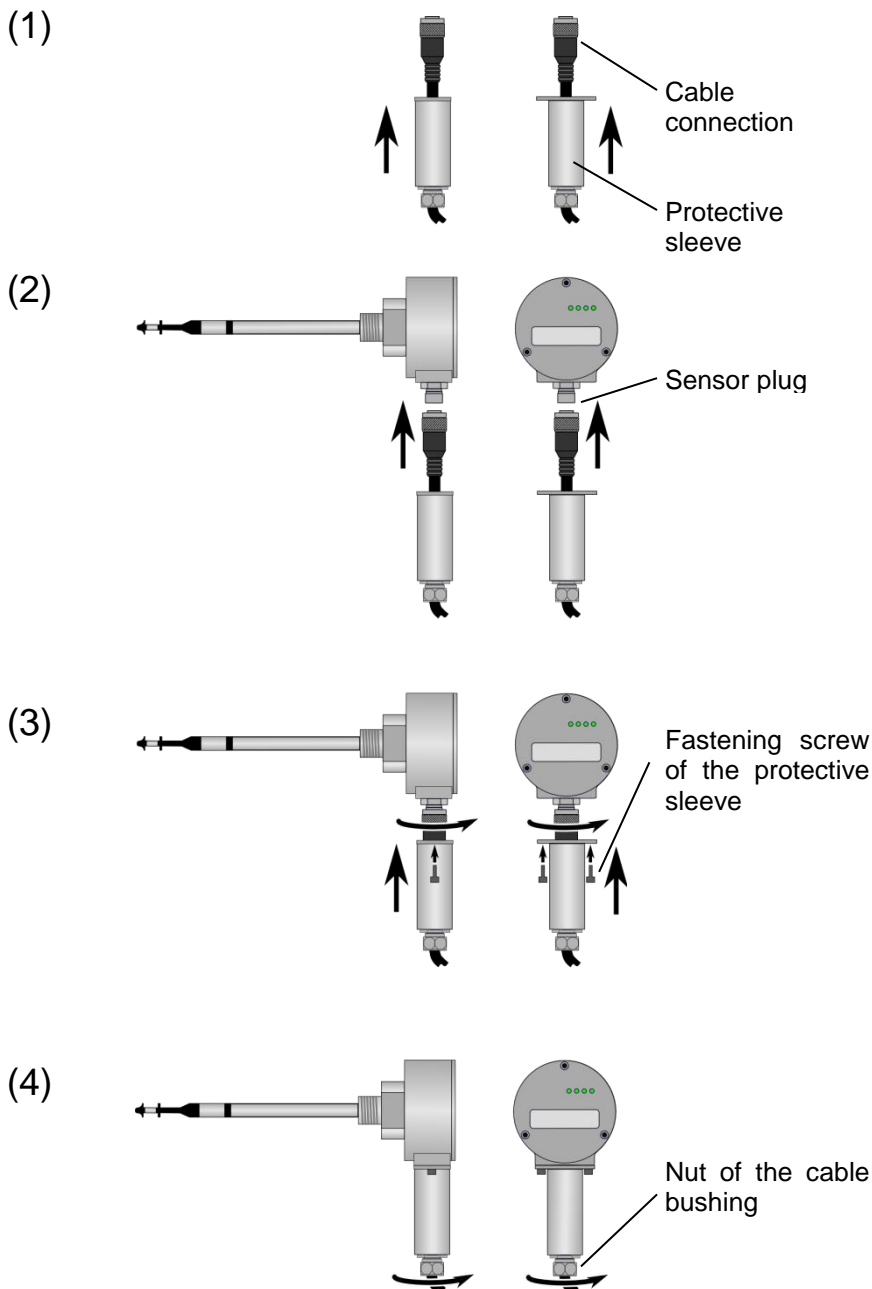
The connection on the sensor side is realized by means of a plug-in connector. It must be protected against impacts and UV radiation by means of a protective sleeve with cable entry (1x M12) included in the delivery which has to be mounted subsequently.

### Protective sleeve for plug-in connector



Must absolutely be mounted!

If the protective sleeve is not mounted professionally, the explosion protection becomes null and void!



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

## Assembly (see Figure 6-1):

- (1) Insert the open end of connecting cable into protective sleeve (unscrew the screw of the cable bushing) and push it until almost touching the cable connector.
- (2) Insert cable connector into the plug of the sensor housing and tighten spigot nut manually.
- (3) Push the protective sleeve over the plug-in connector and fasten it with the included screws (hexagon sockets 2.5 mm; do not forget the snap rings) to the housing.
- (4) Tighten nut of the cable bushing (7 Nm).

## 7 Rating plate label

The rating 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 provided that it can be clearly assigned to the sensor and is legible and undetachably. Examples are:

- Mounting it directly at the sensor, e.g. by means of machine screws through the fixing hole.



- Mounting it undetachably onto a near wall 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 20.500 Ex**

Part-No. **521 501** – (Ordering code: X Y Z P 2)

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**
- Immision (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, 3D“: **EN 60079-0:2012 + A11:2013**
- Equipment category „3G“: **EN 60079-15:2010**
- Equipment category „3D“: **EN 60079-31:2014**

- Designation:



**II 3G Ex nA IIC T4 Gc**  
**II 3D Ex tc IIIC T125°C Dc IP64**

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

- DEKRA EXAM GmbH  
Identification no.: **0158**  
Dinnendahlstrasse 9  
D-44809 Bochum

- Type Examination Certificate: **BVS 11 ATEX E 130**

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 "H. Scholz".

Helmar Scholz  
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