SCHMIDT® Flow Sensor
SS 20.500 Ex
– Supplementary instructions for use in explosive atmospheres ATEX

Instructions for Use

SCHMIDT® Flow Sensor

SS 20.500 Ex – ATEX version

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Imprint:

Version 526488.02

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 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 personal protection.
- **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.: 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 them 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 ecological and recyclable. Basically the following materials are used:

- cardboard box
- polyethylene foam or polyethylene film

Dispose packaging by giving 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 nor higher than +85°C.

3 Safety instructions for explosive atmospheres

- The **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 ^{o}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 (according to TRBS, Technical Rules for Operational Safety, 1203; "qualified person“).
- 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 an rules are useful:

- EN 1127-1: Explosion prevention and protection - Basic concepts and methodology

o TRBS series

Standards for explosive gas atmospheres ("G"):
o EN 60079-10: Classification of explosive atmospheres
o EN 60079-14: Electrical apparatus for explosive atmospheres
o EN 60079-17: Inspection and maintenance

Standards for explosive dust atmospheres ("D"):
o EN 61241-10: Classification of explosive dust atmospheres
o EN 61241-14: Selection and installation
o EN 61241-17: Inspection and maintenance

4 Application range

The **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 of category 3 with the following ingress protection for:

- o **Gases (zone 2)**: **II 3G Ex nA T4 X**
- o **Dusts (zone22)**: **II 3D Ex tD A22 IP64 T125℃ X**

The allowed operating temperatures are:
- o Electronics : -20 ... +70 ℃
- o Sensor probe: -40 ... +85 ℃

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

In order to maintain the ingress protection, the sensor probe must be protected against impacts by the application. This can be realized, for example, by installing the sensor in a closed system (e.g. tube, chamber etc.) guaranteeing impact protection.

Special operating conditions - X

When installing the flow sensor **SS 20.500 Ex**, make sure that the sensor probe is not subject to the risk of impact!

Pressure-tight accessories

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

Observe the pressure safety devices.

Opening the housing

It is not allowed to open the housing (sealed housing screws). By opening the housing without authorization, the explosion protection becomes null and void!

Mounting ground or equipotential bonding conductor

The metallic housing of the sensor must have electrical connection to a ground or equipotential bonding conductor according to EN 60079-0 and EN 61241-0.

The cable required must be fastened to the locking screw of the housing.

In general the following applies for the 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 x 4 mm^2
- The screw must be firmly tightened at the terminal so that the conductor cannot be loosened or twisted.

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 applies:

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!

We recommend to connect at first the connecting cable in the field side (first connect the protective sleeve to the cable, see the following description).

The connection on the sensor side is realized via a plug-in connector protected against impacts and UV radiation by a protective sleeve included in the delivery that must be mounted additionally (assembly see Figure 6-1 Assembly of the connecting cable with protective sleeve

).

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!

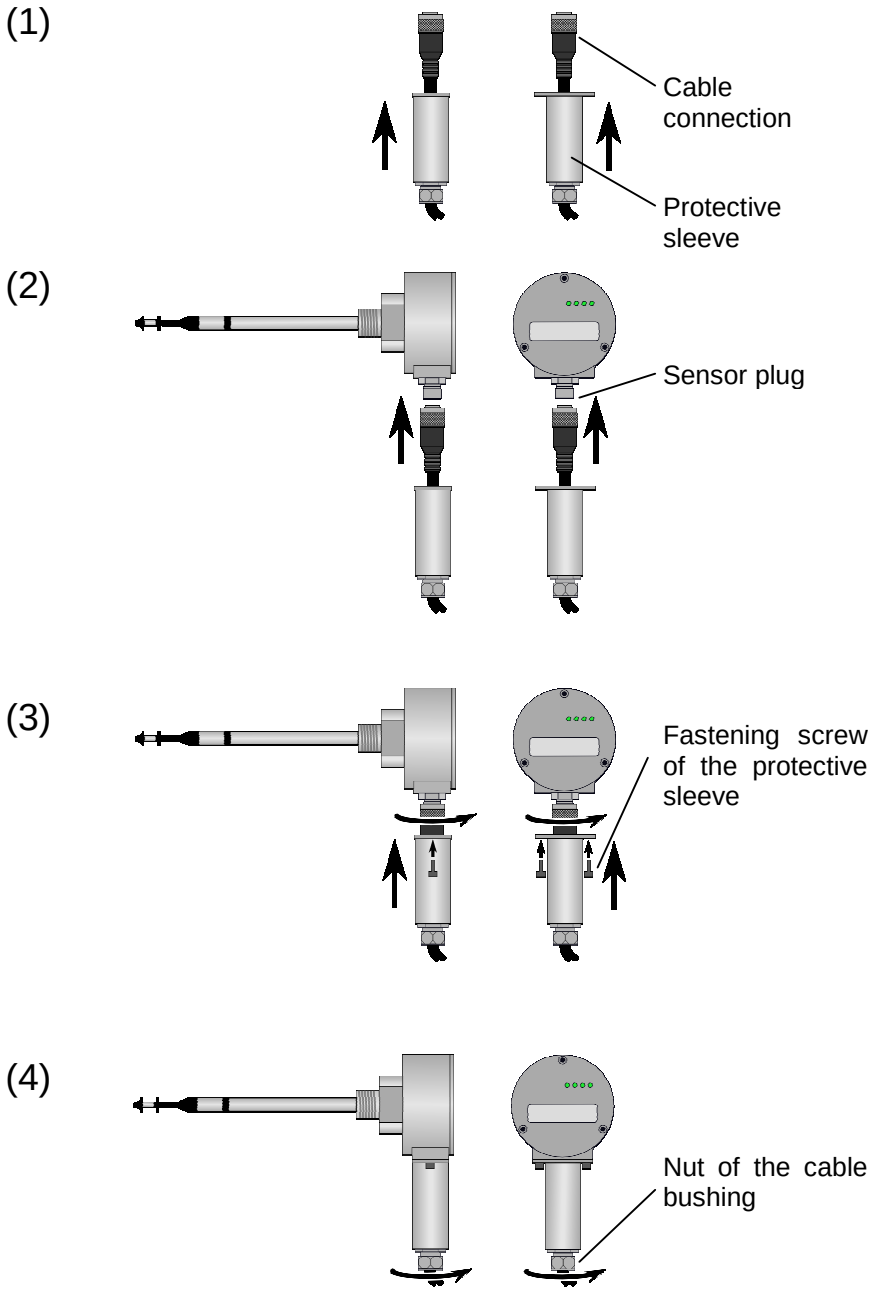

Figure 6-1 Assembly of the connecting cable with protective sleeve

Assembly (see Figure 6-1)**:**

(1) Insert the open end of the connecting cable into the 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 socket 2.5mm; 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 undetachable. 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 EC Declaration of conformity

EC 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 relevant protection requirements in respect of the electromagnetical compatibility (EMC) which are laid down in the guidelines of the council for the harmonization of the regulations of the members within the European community (**2004/108/EG**).

  Designation: CE

  The assessment of EMC for industrial applications refers to the following European standards

Electromagnetic Emission	**EN 61000-6-3: 2007**
Electromagnetic Immunity	**EN 61000-6-2: 2005**

- is in compliance with the relevant protection requirements in respect of explosive atmospheres which are laid down in the guidelines of the council for the harmonization of the regulations of the members within the European community (**94/9/EG:**).

  For the appraisal of compliance of the directive (attachment II) a test report was generated and the results deposited.

  Designation: Ex **II 3G Ex nA II T4 X**
  II 3D Ex tD A22 IP64 T125°C X

  For the use in explosion hazardous environments the following standards are applied for design and construction of the determined device:

Category „3G“:	**EN 60079–0:06**	**EN 60079-15:05**
Category „3D“:	**EN 61241-0:06**	**EN 60079-1:04**

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

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

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