

# Instruction Manual



## SV Sensor Adaptor

To connect KEM Flow Meters with an  
EX II 2G D Electronic Device

**Manual-Version**

SV\_M\_EN\_170515\_E003

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## 1. General Information

### 1.1. Object and purpose

The sensor adaptor will be the linking element between a flow meter and an encapsulated flameproof electronic. (EXd)

A flow meter can be a gear meter, helical gear meter, turbines or others. Those have a sensor hole or a thread sleeve like it is defined in this document or mentioned in the attached drawings.

The electronic can be any indicating device like a FlowPod or a junction box that encloses additional electronics to evaluate the signals from the sensor coil.

The sensor coil can be a carrier frequency or an inductive one. Both are described in this document.

Typical applications are marine applications on ships or oil and gas applications.

### 1.2. Safety

#### 1.2.1. General Safety

Following these instructions is mandatory:

Any responsibility is lapsed if the instructions and procedures as described in this manual are not followed.

**LIFE SUPPORT APPLICATIONS:** The SV-sensor-adaptor is not designed for use in life support appliances, devices or systems where malfunction of the product can reasonably be expected to result in a personal injury. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify the manufacturer and supplier for any damages resulting from such improper use or sale.

Electrostatic discharge does inflict irreparable damage to electronics! Before installing or opening the unit, the installer has to be discharged by touching a well-grounded object.

This unit must be installed in accordance with the EMC (Electro Magnetic Compatibility) guidelines.

Do connect a proper grounding to the aluminum/stainless steel casing as indicated if the SV\*\*\_\*\*\*\*\_\*\*\*\*\_\*\* is used on a ship, truck or other application, where the object is not sufficiently grounded.

When assembling the equipment, applicable national standards and installation regulations must be observed.

Sensor holes, into which line bushings are screwed, must meet the minimum requirements of IEC/EN 60079-1, section 5.3 (Table 4). Observe the minimum depth of engagement. This requires comparing the length of the thread in the line bushing with the minimum depths of engagement in IEC/EN 60079-1. A threading length which is longer or equal to the lengths specified in IEC/EN 60079-1 must be selected.

### 1.2.2. Safety rules and precautionary measures

Following these instructions is mandatory.

a.	Modifications of the SV**_****_****_** implemented without preceding written consent from the manufacturer, will result in the immediate termination of product liability, warranty period and certification validity.
b.	Authorized technicians must carry out installation, use, maintenance and servicing of this equipment.
c.	Never open the housing in hazardous areas while connected to power supplying or consuming devices. Open the housing only if all leads are free of current.
d.	If the operator detects errors or dangers, or disagrees with the safety precautions taken, then inform the owner or principal responsible.
e.	The local labor and safety laws and regulations must be adhered to.
f.	The manufacturer accepts no responsibility whatsoever if the following safety rules, precautions instructions and the procedures as described in this manual are not followed.
h.	Modifications or repair of the flamepath is not allowed.

### 1.2.3. Warnings in this manual

#### **WARNING!**

Warnings provide very important information for the correct usage of the equipment. Not observing the warnings may lead to danger for the equipment and to danger for health and life of the user

#### **NOTE:**

Notes provide important information for the correct usage of the equipment. If the notes are not observed, a malfunction of the equipment is possible.

### 1.2.4. Symbols marked on equipment



Attention! Refer to manual



Protective (earth) ground

## 1.3. Ex protection

### 1.3.1. Ex Supply Data

Power Limitation inductive coil (non powered)	Voltage: $U_i < 5.5 \text{ V}$ Current: $I_i < 70 \text{ mA}$ Power: $P_i = 0.36 \text{ W}$
Power Limitation carrier frequency coil (Actively powered)	Power: $P_i = 0.11 \text{ W}$

### 1.3.2. Ambient Temperature

-40 °F to 185 °F [-40 °C to 85 °C]

### 1.3.3. Markings

- KEM Küppers Elektromechanik GmbH Liebigstr. 5, D-85757 Karlsfeld
- Typcode: SV\*\*\_\*\*\*\*\_\*\*\*\*\_\*\*
- Labelling:
  - ATEX RL: 0123 Ex II 2G
  - ATEX/IECEX: Ex db IIC Gb
  - Amb. Temp.: [-40 °F to 185 °F -40 °C bis 85 °C]
- Certifications:
  - Sira 16ATEX1261U
  - IECEX SIR 16.0089U
- Warnings:
  - Do not open when an explosive atmosphere is present.
  - Do not open when energized.
  - See installation instruction document.

#### 1.4. Ordering code

[illegible]

## 2. Assembly

### 2.1. Constituent parts

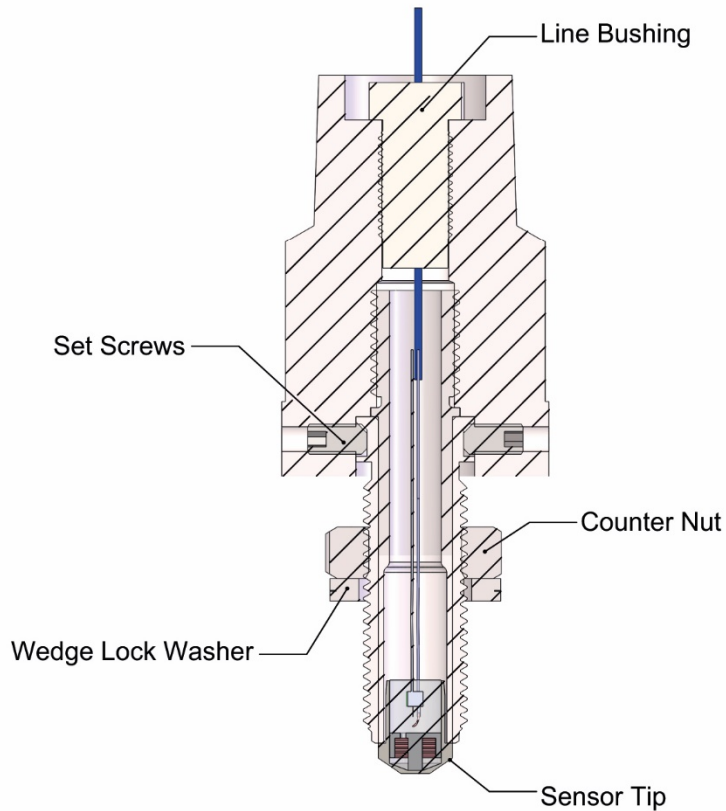


Fig. 1: SV-Adaptor Assembly

### 2.2. Installing instructions

First connect the two wires with the electronic device. Then mount the sensor adaptor to the EX II 2GD electronic and tighten it with 32 Nm. Secure the assembly by a high temperature adhesive.

As soon as this connection is solid the electronics can be assembled in the sensor hole or thread socket. Make sure that the sensor gets assembled to correct sensor connections which are stated in the type code of the sensor adaptor.

Screw in the adaptor gently by hand until you feel that it touches the ground. Then turn it back for a quarter turn. Secure the position with the counternut and make sure that the wedge lock washer is in between. This washer is necessary to make sure that the counternut can not get loose while the system is under vibration for example. The necessary torque for the counternut is 32 Nm.

Orientate the electronic device in the way you need it and secure the position by fastening the setscrews, which are freely accessible, with a torque of 2.9 Nm.



## 2.3. Dimensional drawing

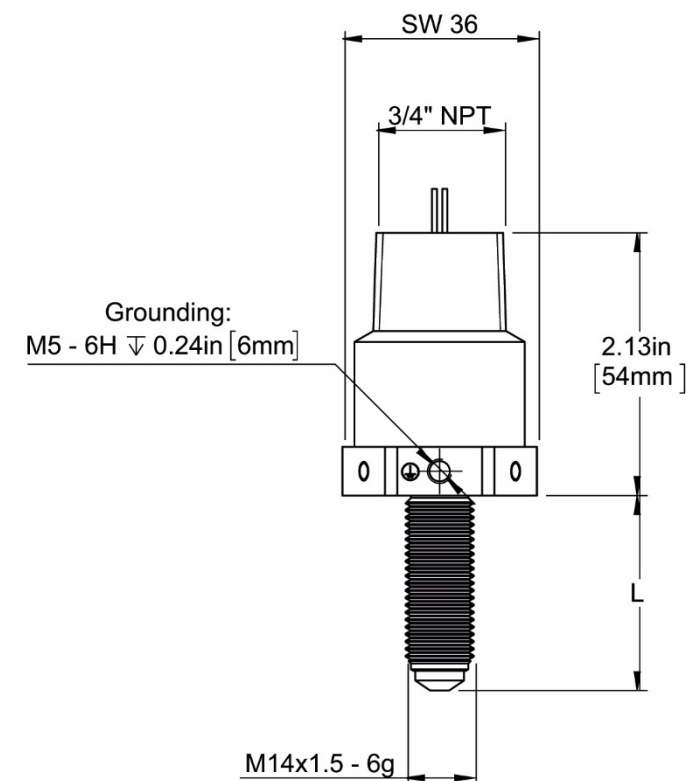


Fig. 2: Dimensional drawing

Sensor type	Length
T-K/I-K	1.57 in (40 mm)
T-L/I-L	3.15 in (80 mm)
T-R	1.81 in (46 mm)
T-S	3.39 in (86 mm)

## 2.4. Sensor types

### 2.4.1. Electrical Parameter of the Inductive Coil

Wire diameter	60 $\mu\text{m}$
Resistance	Min. 70 $\Omega$
Inductance	Max. 30 mH
Coil supply	Current < 200 $\mu\text{A}$ Voltage < 5 V for Operational amplifier

### 2.4.2. Electrical Parameters of the carrier frequency coil

Wire diameter	60 $\mu\text{m}$
Resistance	Min. 16 $\Omega$
Inductance	Max. 2 mH
Coil supply	Current (Colpittz Oscillator) < 1 mA; Voltage < 5 V

### 2.4.3. Grounding

A M5 thread is implemented for grounding.

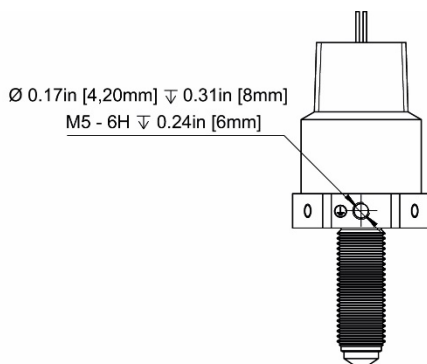


Fig. 3: Grounding

## 2.5. List of illustrations

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