

**Operating Instructions  
for  
Low-Volume Flow Switch**

**Model: SVN / KSR**



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## 2. Note

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Please read these operating instructions before unpacking and putting the unit into operation. Follow the instructions precisely as described herein.

The devices are only to be used, maintained and serviced by persons familiar with these operating instructions and in accordance with local regulations applying to Health & Safety and prevention of accidents.

When used in machines, the measuring unit should be used only when the machines fulfil the EWG-machine guidelines.

**as per PED 97/23/EC**

In acc. with Article 3 Paragraph (3), "Sound Engineering Practice", of the PED 97/23/EC no CE mark.

Diagram 6, Pipe, Group 1 dangerous fluids

## 3. Instrument Inspection

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Instruments are inspected before shipping and sent out in perfect condition.

Should damage to a device be visible, we recommend a thorough inspection of the delivery packaging. In case of damage, please inform your parcel service / forwarding agent immediately, since they are responsible for damages during transit.

### **Scope of delivery:**

The standard delivery includes:

- Low-Volume Flow Switch                      model: SVN / KSR
- Operating instructions

## 4. Regulation Use

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Any use of the Flow Switch, model: SVN/KSR, which exceeds the manufacturers specification may invalidate its warranty. Therefore any resulting damage is not the responsibility of the manufacturer. The user assumes all risk for such usage.

## 5. Operating Principle

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The KOBOLD flow switch types SVN and KSR operate on the known suspended float principle of measurement and are suited for liquids and gases.

This switch must be fitted vertically with the media flowing from bottom to top.

### Set point

The flow switch is designed for small flows. The set point is set at the factory to the value specified by the customer (a decreasing or increasing flow rate is specified).

## 6. Use in Hazardous Areas

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### 6.1. General

The Low-Volume Flow Switch, model: **KSR**, does not have a potential igniting source of its own as a mechanical operating resource; **it does not get any identification according to the guideline 94/9/EC ("ATEX 100a")**.

The mounted contact can be used in intrinsically safe circuits as a "simple apparatus" according to EN 60079-14. The following limit values for the switching contact should not be exceeded:  $U = 30 V_{UC}$ ,  $I = 100 \text{ mA}$ ,  $P = 1,2 \text{ W}$ .

The measurement units can be used as follows:

- a) In the Zone 2 (Gas-Ex, Cat. 3G) in explosion group of IIA, IIB and IIC
- b) In the Zone 22 (Dust-Ex, Category 3D) with non-conductive dusts with a minimum igniting energy of  $> 3 \text{ mJ}$
- c) In the Zone 1 (Gas-Ex, Cat. 2G) into explosion group of IIA, IIB and IIC
- d) In the Zone 21 (Dust-Ex, Category 2D) with non-conductive dusts with a minimum igniting energy of  $> 3 \text{ mJ}$

## **6.2. Electrical Contact**

The Low-Volume Flow Switch, model: KSR, can be used in the Ex-area according to category 2G, 2D Cluster II, in Zone 1 and 21, in zone 1 and 21 in connection with a switching amplifier for protection type Ex II (2)GD [EEx ia] IIC (intrinsically safe)

The electrical connection is explained in the section 8 Electrical Connection.

## **6.3. Potential Equalisation**

The Low-Volume Flow Switches, model: KSR, have to be incorporated in the potential equalisation system of the system. This is done by the connection tube made of metal.

# **7. Mechanical Connection**

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### **Before installation:**

- Remove all packing materials and transport retainers and ensure that no such materials remain in the device.
- Make sure that the maximum operating pressure and temperature of the device are not exceeded (see 10 Technical Information).
- Install the flow switch in the piping system, ensuring that the piping is rigidly supported at the inlet and outlet of the switch with pipe clamps
- Ensure that the piping is aligned with the inlet and outlet fittings and the no piping induced stresses are exerted in the switch. This stress can result in damage to the switch during system operation
- Protect the measuring tube from external damage.
- Avoid pressure surges in the measuring tube, such as those arising from fast start up/shut off of flow or pulsating flow.
- If possible, after completing the mechanical installation, check the threaded connection between the device and the piping for leakage immediately.

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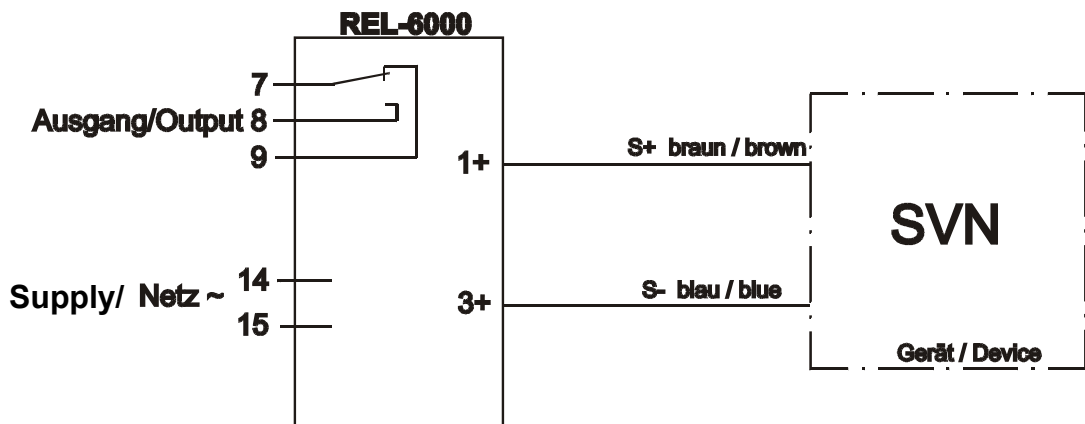
**For complete information on the proper installation of float-type flow meters, see VDI/VDE Directive 3513.**

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## 8. Electrical Connection

- Make sure that the electrical supply lines are de-energized when connecting the device!
- Connect the power supply line to the device connection as shown in the illustration below.

### 8.1. SVN-1200 (Namur)

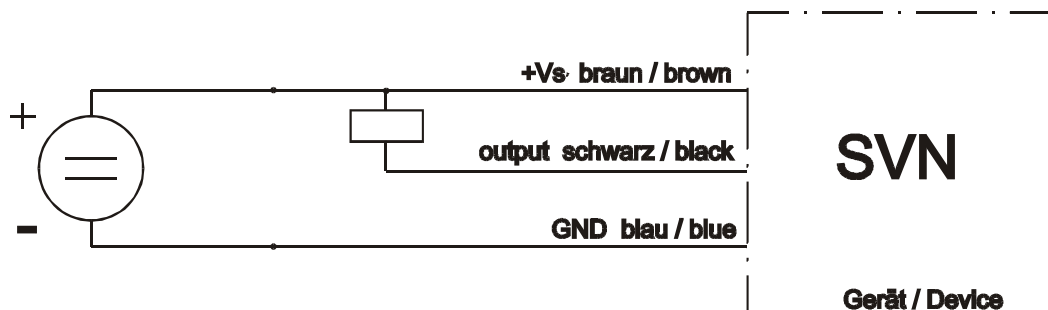


$U_B = 7.7 - 9 V_{DC}$ , 2-wire



**Attention! The electrical values specified for the proximity switch must not be exceeded.**

### 8.2. SVN-1201 (Proximity Switch)



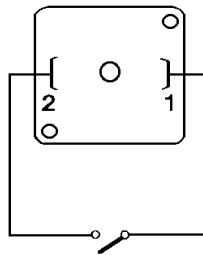
$U_B = 10 - 30 V_{DC}$ , 3-wire  
Output: NPN, N/O contact



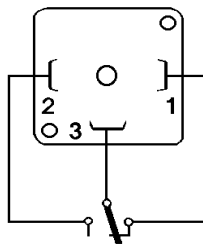
**Attention! The electrical values specified for the proximity switch must not be exceeded.**

### 8.3. KSR with Reed Contact

SPST contact



SPDT contact



**Attention! The electrical values specified for the contact must not be exceeded, even for a short time. For higher switching capacities, we recommend installation of our contact protection relay (such as model MSR) or other contact protection measures.**

After connection of all necessary external devices to the limit contact, the device is completely set up and can now be placed in operation.

## 9. Maintenance

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If the medium to be measured is not dirty, SVN/KSR Flow Monitors are essentially maintenance-free. However, any lime or dirt deposits on the housing or the internal parts should be removed regularly.

To clean the flow monitor, proceed as follows:

- Make sure that the electrical supply lines are de-energized.
- Unscrew the flow monitor from the line.
- To disassemble the flow monitor, remove the stud screws.
- Clean the flow monitor in a cleaning bath or in an ultrasonic bath.
- When reassembling the flow monitor, be sure that the gaskets are seated properly.

## 10. Technical Information

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Switching ranges (permanently set)

Water :	2 – 250 cm <sup>3</sup> /min (model SVN) 2 – 160 cm <sup>3</sup> /min (model KSR)
Air:	50 – 6000 Ncm <sup>3</sup> /min at 1013 mbar; 20 °C

### Technical Details

Connection:	G 1/4 female (1/4 NPT optional)
Protection:	IP 67
Max. pressure:	16 bar
Max. temperature:	70 °C
Materials (media contacting):	St. steel 1.4305; borosilicate glass
Gasket:	FPM

Average electrical switch contact life (MTTF):

at max. electrical load:	10 <sup>5</sup> switching operations
at half load (<10%max. load):	5*10 <sup>7</sup> switching operations
at low load (<10V/<1mA):	10 <sup>8</sup> switching operations



## 11. Order Codes

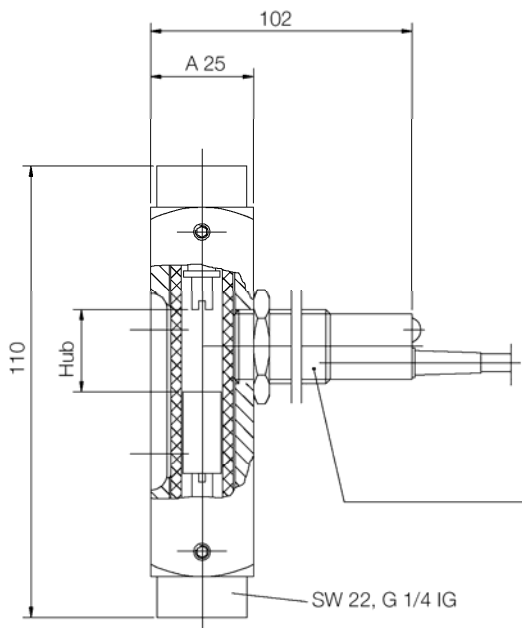
**Order Details** (Example: **SVN-1200 W R08**; 100 cm<sup>3</sup>/min decreasing flow rate)

Order number	Limit switch	Medium	Connection (female)	Set point (please specify in writing)
<b>SVN-1200</b>	Switch Namur* 7.7 - 9 V <sub>DC</sub> , 2 - wire	<b>W</b> = Water <b>L</b> = Air	<b>R08</b> = G 1/4 <b>N08</b> = 1/4 NPT	For example: 100 cm <sup>3</sup> /min. decreasing flow rate
<b>SVN-1201</b>	Switch DC voltage 10 - 35 V <sub>DC</sub> , 3-wire, NPN, N/O contact			
<b>KSR-1200</b>	Reed contact N/O contact 24 V / 0.1 A / 1 Watt			
<b>KSR-1201</b>	Reed contact changeover cont. 100 V / 0.5 A / 5 Watt / VA			

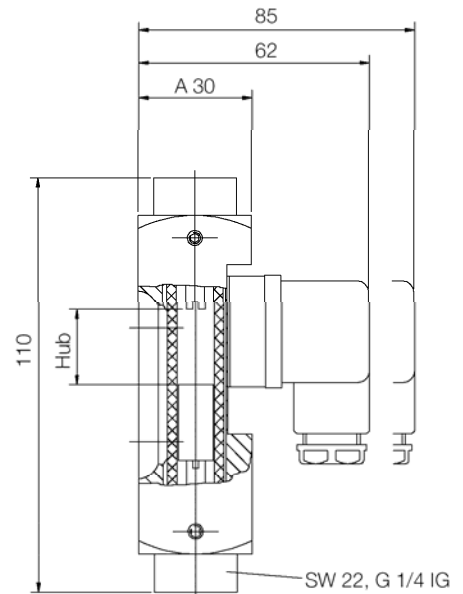
\*We recommend our transistor relay for the Namur switch: for example model REL-6000 (230 V<sub>DC</sub>, 1 changeover contact, 4 A / 500 VA)

## 12. Dimensions

**Model SVN (with inductive switch):**



**Model KSR (with reed contact):**



## 13. Declaration of Conformance

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We, KOBOLD Messring GmbH, Hofheim-Ts, Germany, declare under our sole responsibility that the product:

**Low-Volume Flow Monitor**

**Model: SVN-1201**

to which this declaration relates is in conformity with the standards noted below:

**DIN EN 50081-1 03/1993**

Electromagnetic compatibility (EMC) - Basic specification: Interference emission

**DIN EN 50082-2 04/1995**

Electromagnetic compatibility (EMC) - Basic specification: Noise immunity

**DIN EN 61010-1 01/2001**

Safety requirements for electrical measuring, control and laboratory instruments

Also in conformance with the specifications in the following EEC directives:

**2004/108/EC**

EMC Directive

Hofheim, 10. March 2007



H. Peters  
General Manager



M. Wenzel  
Proxy Holder

We, KOBOLD Messring GmbH, Hofheim-Ts, Germany, declare under our sole responsibility that the product:

**Low-Volume Flow Monitor**

**Model: KSR-...**

to which this declaration relates is in conformity with the standards noted below:

**DIN EN 61000-4-4**                      **04/1995**  
Electromagnetic compatibility (EMC) BURST

**DIN EN 61010**                         **01/2001**  
Safety requirements for electrical measuring, control and laboratory instruments

Also in conformance with the specifications in the following EEC directives:

**2006/95/EC**                      Low Voltage Directive

Hofheim, 10. March 2007



H. Peters  
General Manager



M. Wenzel  
Proxy Holder