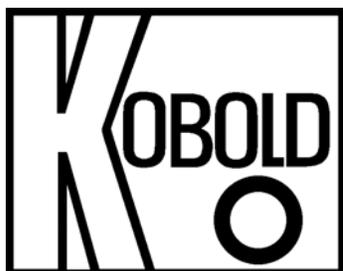


KSR / SVN Low-Volume Flow Switch

User Instructions



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1. General

CAUTION! For safety reasons, please read the cautionary information located at the end of the manual before attempting installation. Additionally, please read these operating instructions before unpacking and placing the unit into operation. Follow the instructions precisely as described.

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.

Any use of the KSR/SVN that exceeds the manufacturers specifications may invalidate the warranty. Therefore, any resulting damage is not the responsibility of the manufacturer. The user assumes all risk for such usage.

2. Need help with your KSR/SVN?

Call one of our friendly engineers at (412) 788-2830.

3. Operating Principle

The KSR and SVN flow switches function according to the familiar suspended-float principle of measurement and are suited for use with gases and low viscosity liquids.

The device must be mounted in a vertical position with a direction of flow from bottom to top.

Switching point

The flow switch is designed for low volume liquid and gas flows. The switching point is permanently set at the factory to the customer's specification (with the specified increasing or decreasing flow rate).

4. Instrument Inspection

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, as they are responsible for damage occurring during transit.

Scope of delivery:

The standard delivery includes:

- Low-Volume Flow Monitor: KSR/SVN
- Operating instructions

5. Mechanical Installation

Before installation:

- Remove all packing materials and transport retainers and ensure that no such materials remain in the device.
- Make sure that the permitted maximum working pressure and temperature limits for the unit are not exceeded.
- The sealing of the connection threads should be accomplished by using Teflon tape or similar material.
- 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
- Hold the inlet and outlet fittings securely when tightening any connections. Do not allow the fitting to rotate or damage to the measuring tube will result.
- During installation of the unit, it must be observed that no excessive torsional or tensile stress is applied to the connection threads. We recommend that the inlet and outlet piping should be mechanically supported at a distance of about 2 inches from the connection fittings.
- 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 the mechanical installation is complete and checked, it should be tested for leaks in the piping and connection threads.

6. Electrical Connection

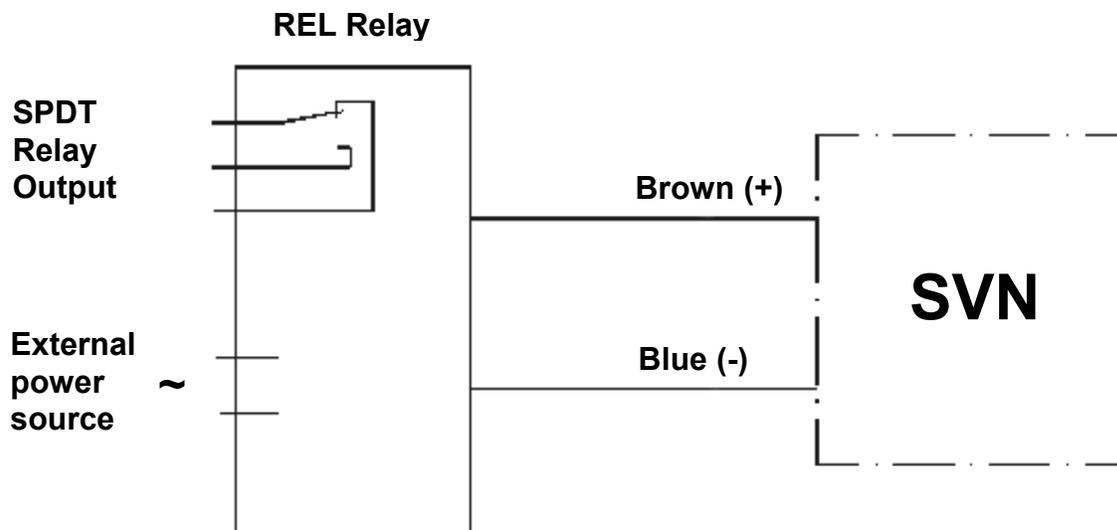
Attention! Make sure that the supply voltage of your system is within the voltage requirements for the device.

- Make certain that the power supply lines are not energized.
- Connect the flowmeter electrical cable with your power supply cable in the manner shown below.

Attention! An incorrect cable connection will result in damage to the unit's electronic circuitry.

- After the correct supply voltage is applied and the signal output is connected, the unit is ready for operation.

6.1. SVN-1200 (Namur)

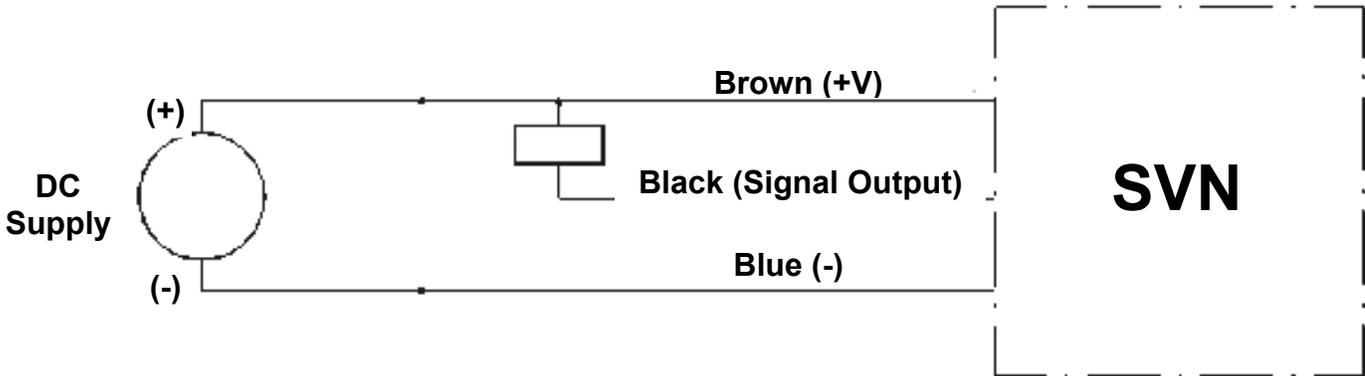


$$V_{\text{SUPPLY}} = 7.7 - 9 V_{\text{DC}}, 2\text{-wire NAMUR}$$

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

KSR/SVN

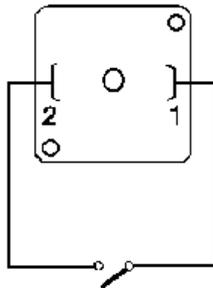
6.2. SVN-1201 (Open Collector)



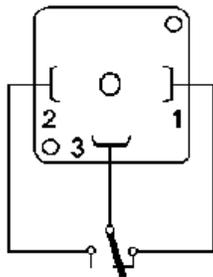
$V_{\text{SUPPLY}} = 5-24 V_{\text{DC}}$, 3-wire
Output: NPN, N/O contact

6.3. 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 that other measures to protect the contact be taken.

7. Technical Information

Switching ranges (Factory Set-Non-Adjustable)

Water: from 0.03 to 4 GPH (model SVN)
from 0.03 to 2.5 GPH (model KSR)

Air: from 0.1 to 13 SCFH

Connection: 1/4" FNPT, G-1/4 female thread

Protection type: IP 67 (SVN)
IP 65 (KSR)

Max. Pressure: 230 PSIG

Max. Temperature: 160 °F

Wetted Materials
(in contact with media): 303 SS, Borosilicate glass, Viton Seals

8. Order Codes

Order number	Limit switch	Medium	Connection (Female thread)	Switch point (Specify in writing)
SVN-1200	NAMUR* Switch 7.7 – 9 V _{DC} , 2-wire	W = Water L = Air A = Other	R08 = G 1/4 N08 = 1/4" NPT	Example: Nitrogen Gas, 5 SCFH, Decreasing Flow
SVN-1201	DC voltage Switch 10 – 35 V _{DC} , 3-wire			
KSR-1200	Reed contact, N/O 24 V / 0.1 A / 1 watt			
KSR-1201	Reed contact, SPDT 100 V / 0.5 A / 5 watt/VA			

*A transistor relay for the NAMUR Switch,
such as our REL Series is required for switch operation.

9. Maintenance

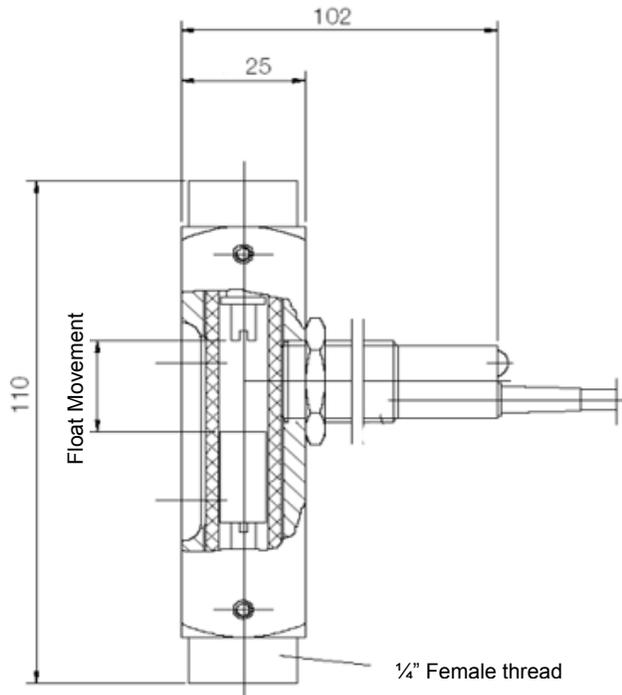
If the medium to be measured is not dirty, SVN/KSR Flow Monitors are essentially maintenance-free. However, any lime or dirt deposits on the housing or the internal parts should be removed regularly.

To clean the flow monitor, proceed as follows:

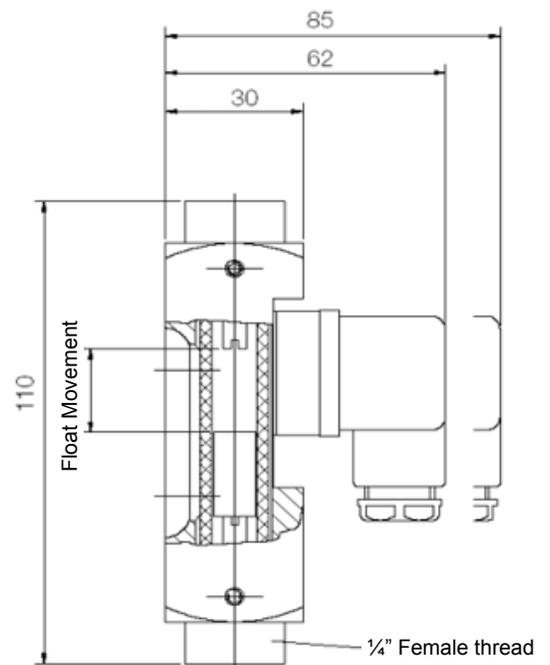
- Make sure that the electrical supply lines are de-energized.
- Unscrew the flow monitor from the line.
- To disassemble the flow monitor, loosen the set screws and pull the fittings away from the aluminum body.
- Clean the wetted parts in a cleaning bath or in an ultrasonic bath. **Do not immerse the electrical switch assembly!**
- When reassembling the flow monitor, be sure that the o-ring seals are seated properly in the fitting grooves. Lubricate the o-rings with a suitable fluid (water, glycerine, isopropyl alcohol) to ease assembly.
- Do not overtighten the set screws

10. Dimensions

Model SVN
with proximity switch



Model KSR
with reed contact



11. Cautionary Information

PLEASE READ THE FOLLOWING FLOW METER/MONITOR WARNINGS BEFORE ATTEMPTING INSTALLATION OF YOUR NEW DEVICE. FAILURE TO HEED THE FOLLOWING INFORMATION MAY RESULT IN EQUIPMENT FAILURE AND POSSIBLE SUBSEQUENT PERSONAL INJURY.

- Inspect the instrument for damage upon arrival. Cracked, fractured, or otherwise damaged instruments must not be put into use, since the device is weakened to an unknown extent.
- Under NO circumstances must the maximum tolerances of flow, pressure, temperature, or supply voltage be exceeded.
- The maximum tolerances of the device have been determined using water, air, and/or oil. If using other media, especially corrosive media, it is critically important that the user determine chemical compatibility with our instruments. KOBOLD Instruments Inc. cannot accept responsibility for failure and consequences resulting from the use of media other than water, air, mineral oil or nitrogen.
- The sudden cessation of fluid flow causes what is typically called water hammer. Water hammer is a transient force caused by the transfer of momentum of a flowing fluid to the piping system when the flow of fluid is suddenly stopped (i.e. pump trip or valve closure).
- Water hammer can cause fluid pressure surges, which could cause the flow measuring device's pressure limit to be exceeded, resulting in equipment failure and possible personal injury. These pressure surges can be particularly harmful if the flow instrument is empty since there would be no backpressure in the device. To avoid these pressure surges, the fluid lines should remain full and flow should be introduced and isolated from the system slowly.
- Freezing of fluid in the instrument must be avoided since the resultant expansion will damage the flowmeter and make it unsafe for use.