



All-Metal Flow Meters and Switches for Liquids



measuring
•
monitoring
•
analysing



- Measuring Range:
0.1 -1.0 to 10-110 L/min
water
- Accuracy:
±5 % f. s.
- p_{max} 350 bar,
t_{max} 100 °C
- Connection:
G ¼ to G 1 ¼ female
- Material:
Brass or stainless steel



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Model:
SMV



Description

The proven KOBOLD flow meters and switches model SMV-... are based on the principle of the well-known float-type flow meters except for the conventional tapering measuring tube.

These patented instruments are provided instead with a cylindrical flow tube with conical slots around the periphery.

This eliminates the usual problems of guiding the cylindrical float within a tapering measuring glass. The novel design including the provision of an appropriately dimensioned annular gap of constant width between the float and the flow tube has enabled the sensitivity to dirt to be considerably reduced.

The float comprises permanent magnets actuating a bistable reed contact external to the flow circuit, that is, the flowing medium is hermetically separated from the electrical contact. In addition it is embedded in a height-adjustable switch housing thus ensuring that the contact cannot be damaged even by an aggressive atmosphere.

As the medium enters the instrument the float rises. Once its magnetic field reaches the contact tips of the reed switch the contact closes. As the flow increases the float rises further until it reaches its stop. This prevents the float from going beyond the contact range of the magnetic operating tube, that is, the contact remains closed thus ensuring bi-stable switching.

With the models SMV-2... and SMV-3... the magnetic field also activates an external, that is, hermetically separated indicator, as a result of which flows are measured accurately even at high operating pressures.

The magnetic field and the indicator are designed so as to ensure that the pointer follows even abrupt changes in flow rate.

Applications

- Lubrication circuits
- Paper-making machines
- Machine tools
- Glass-melting tanks
- Cooling circuits
- Welding machines
- Induction furnaces
- Pumps

Technical Details

| | |
|------------------------|---|
| Housing: | SMV-x1...: Brass, Ms 58 |
| | SMV-x2...: Stainless steel, 1.4301 |
| Connections: | SMV-x1...: Brass, Ms 58 |
| | SMV-x2...: Stainless steel, 1.4301 |
| Float: | SMV-x1...: Brass, Ms 58 |
| | SMV-x101: PP |
| | SMV-x2...: Stainless steel, 1.4301 |
| | SMV-x101: PVDF |
| Nozzle: | SMV-x1...: Brass, Ms 58 |
| | SMV-x2...: Stainless steel, 1.3955 |
| Seals: | SMV-x1...: NBR |
| | SMV-x2...: FPM |
| Max. temperature: | 100 °C |
| | SMV-..01...: 70 °C |
| Max. pressure: | SMV-..01...: 16 bar |
| | SMV-x1...: 250 bar |
| | SMV-x2...: 350 bar |
| Installation position: | Vertical, flow in the upward direction |
| Accuracy: | ± 5% f. s. |
| Repeatability: | ≤ 1% |

Contacts with SMV-1..., SMV-3...

| | |
|------------------------------|--|
| Electrical connection: | 2 m cable (SMV-...FO...) With all other types: Connector DIN 43 650 |
| Electrical switching values: | N/O contact (CSA) max. 240 V _{AC} / 100 VA / 1.5 A |
| | Changeover contact (CSA) max. 240 V _{AC} / 60 VA / 1 A |
| | N/O contact (UL) 250 V _{AC} - 0.4 A / 200 V _{DC} - 0.25 A 50 V _{DC} - 1.0 A |
| | Changeover contact (UL) 250 V _{AC} - 0.136 A / 30 V _{DC} - 1.0 A |
| | N/O contact Ex II 2G EEx m II T6 / 2D IP67 T 80°C max. 250 V _{AC} / 100 VA / 1.5 A (I _K = 5 A) |
| Ex-range: | ATEX zone 1 as "simple operator" or N/O contact Ex |
| Protection: | IP 65 (electr. contact) IP 54 (side indicator) |



Order Details

Flow switches with 1 contact model: SMV-1...

(Example: SMV-1101H R0 R08)

| Measuring range L/min water | Pressure loss Δ P (bar) | Float according to version | | Brass | Stainless steel | Contact* | Connection female thread | |
|-----------------------------|-------------------------|----------------------------|-----------|--------------|-----------------|--|--------------------------------|------------------------------------|
| | | Brass | St. steel | | | | | |
| 0.1...1 | 0.02 | PP | PVDF | SMV-1101H... | SMV-1201H... | ...R0.. = 1 N/O contact ...U0.. = 1 changeover contact ...F0.. = 1 Ex N/O contact ...C0.. = 1 N/O contact (UL) ...D0.. = 1 changeover contact (UL) | ..R08 = G 1/4 ..R15 = G 1/2 | ..N08 = 1/4 NPT ..N15 = 1/2 NPT |
| 0.15...1.7 | 0.04 | Brass, nickel-pl. | St. steel | SMV-1103H... | SMV-1203H... | | | |
| 1...4.5 | 0.04 | St. steel | St. steel | SMV-1105H... | SMV-1205H... | | | |
| 1...7 | 0.11 | Brass, nickel-pl. | St. steel | SMV-1107H... | SMV-1207H... | | | |
| 1...9 | 0.12 | St. steel | St. steel | SMV-1109H... | SMV-1209H... | | | |
| 2...14 | 0.18 | St. steel | St. steel | SMV-1111H... | SMV-1211H... | | | |
| 2.5...20** | 0.06 | Brass, nickel-pl. | St. steel | SMV-1113H... | SMV-1213H... | | | |
| 3...45 | 0.22 | Brass, nickel-pl. | St. steel | SMV-1115H... | SMV-1215H... | | | |
| 3.5...50 | 0.4 | Brass, nickel-pl. | St. steel | SMV-1117H... | SMV-1217H... | | | |
| 10...110 | 0.3 | St. steel | St. steel | SMV-1119H... | SMV-1219H... | | | |

*This instrument is also available with 2 contacts. Please specify in writing.

**SMV-...13H...R08: Measuring range 2.5 ... 18 L/min water.

Flow meter model: SMV-2...

(Example: SMV-2109H 00 R15)

| Measuring range L/min water | Pressure loss Δ P (bar) | Float according to version | | Brass | Stainless steel | Contact* | Connection female thread | |
|-----------------------------|-------------------------|----------------------------|-----------|--------------|-----------------|---|--------------------------------|------------------------------------|
| | | Brass | St. steel | | | | | |
| 0.1...1 | 0.02 | PP | PVDF | SMV-2101H... | SMV-2201H... | ...00.. = without contact ...Ex.. = with ATEX-approval | ..R08 = G 1/4 ..R15 = G 1/2 | ..N08 = 1/4 NPT ..N15 = 1/2 NPT |
| 0.15...1.7 | 0.04 | Brass, nickel-pl. | St. steel | SMV-2103H... | SMV-2203H... | | | |
| 1...4.5 | 0.04 | St. steel | St. steel | SMV-2105H... | SMV-2205H... | | | |
| 1...7 | 0.11 | Brass, nickel-pl. | St. steel | SMV-2107H... | SMV-2207H... | | | |
| 1...9 | 0.12 | St. steel | St. steel | SMV-2109H... | SMV-2209H... | | | |
| 2...14 | 0.18 | St. steel | St. steel | SMV-2111H... | SMV-2211H... | | | |
| 2.5...20** | 0.06 | Brass, nickel-pl. | St. steel | SMV-2113H... | SMV-2213H... | | | |
| 3...45 | 0.22 | Brass, nickel-pl. | St. steel | SMV-2115H... | SMV-2215H... | | | |
| 3.5...50 | 0.4 | Brass, nickel-pl. | St. steel | SMV-2117H... | SMV-2217H... | | | |
| 10...110 | 0.3 | St. steel | St. steel | SMV-2119H... | SMV-2219H... | | | |

**SMV-...13H...R08: Measuring range 2.5 ... 18 L/min water.

Flow meter and switches with 1 contact model: SMV-3...

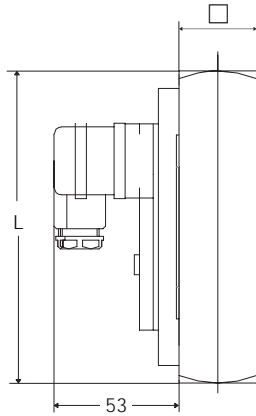
(Example: SMV-3205H R0 R08)

| Measuring range L/min water | Pressure loss Δ P (bar) | Float according to version | | Brass | Stainless steel | Contact* | Connection female thread | |
|-----------------------------|-------------------------|----------------------------|-----------|--------------|-----------------|--|--------------------------------|------------------------------------|
| | | Brass | St. steel | | | | | |
| 0.1...1 | 0.02 | PP | PVDF | SMV-3101H... | SMV-3201H... | ...R0.. = 1 N/O contact ...U0.. = 1 changeover contact ...F0.. = 1 Ex N/O contact ...C0.. = 1 N/O contact (UL) ...D0.. = 1 changeover contact (UL) | ..R08 = G 1/4 ..R15 = G 1/2 | ..N08 = 1/4 NPT ..N15 = 1/2 NPT |
| 0.15...1.7 | 0.04 | Brass, nickel-pl. | St. steel | SMV-3103H... | SMV-3203H... | | | |
| 1...4.5 | 0.04 | St. steel | St. steel | SMV-3105H... | SMV-3205H... | | | |
| 1...7 | 0.11 | Brass, nickel-pl. | St. steel | SMV-3107H... | SMV-3207H... | | | |
| 1...9 | 0.12 | St. steel | St. steel | SMV-3109H... | SMV-3209H... | | | |
| 2...14 | 0.18 | St. steel | St. steel | SMV-3111H... | SMV-3211H... | | | |
| 2.5...20** | 0.06 | Brass, nickel-pl. | St. steel | SMV-3113H... | SMV-3213H... | | | |
| 3...45 | 0.22 | Brass, nickel-pl. | St. steel | SMV-3115H... | SMV-3215H... | | | |
| 3.5...50 | 0.4 | Brass, nickel-pl. | St. steel | SMV-3117H... | SMV-3217H... | | | |
| 10...110 | 0.3 | St. steel | St. steel | SMV-3119H... | SMV-3219H... | | | |

**SMV-...13H...R08: Measuring range 2.5 ... 18 L/min water.

Order Details and Dimensions

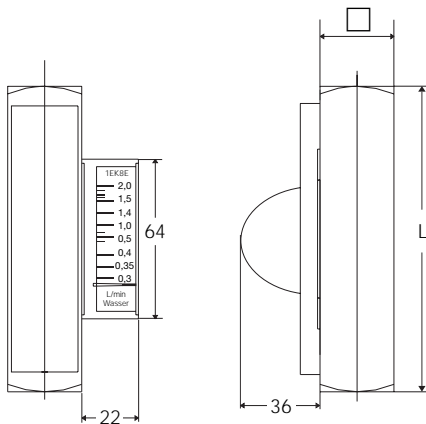
1. Flow switches with 1 contact model: SMV-1...



| Model | Square (mm) | Thread G | L (mm) | Weight (kg) |
|-----------|-------------|------------|------------|-------------|
| SMV-..01H | 30x30 | 1/4 (1/2*) | 132 (136*) | 0.9 |
| SMV-..03H | 30x30 | 1/4 (1/2) | 132 (136) | 0.9 |
| SMV-..05H | 30x30 | 1/4 (1/2) | 132 (136) | 0.9 |
| SMV-..07H | 30x30 | 1/4 (1/2) | 132 (136) | 0.9 |
| SMV-..09H | 30x30 | 1/4 (1/2) | 132 (136) | 0.9 |
| SMV-..11H | 30x30 | 1/4 (1/2) | 132 (136) | 0.9 |
| SMV-..13H | 30x30 | 1/4 (1/2) | 132 (136) | 0.9 |
| SMV-..15H | 40x40 | 3/4 (1) | 156 (150) | 1.7 |
| SMV-..17H | 40x40 | 3/4 (1) | 156 (150) | 1.7 |
| SMV-..19H | 50x50 | 1 1/4 | 165 | 2.9 |

*with NPT-thread

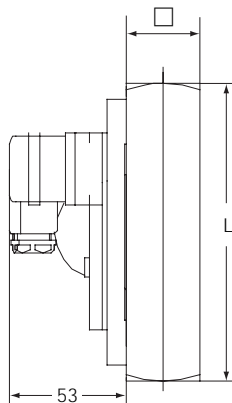
2. Flow meter model: SMV-2...



| Model | Square (mm) | Thread G | L (mm) | Weight (kg) |
|-----------|-------------|------------|------------|-------------|
| SMV-..01H | 30x30 | 1/4 (1/2*) | 132 (136*) | 0.9 |
| SMV-..03H | 30x30 | 1/4 (1/2) | 132 (136) | 0.9 |
| SMV-..05H | 30x30 | 1/4 (1/2) | 132 (136) | 0.9 |
| SMV-..07H | 30x30 | 1/4 (1/2) | 132 (136) | 0.9 |
| SMV-..09H | 30x30 | 1/4 (1/2) | 132 (136) | 0.9 |
| SMV-..11H | 30x30 | 1/4 (1/2) | 132 (136) | 0.9 |
| SMV-..13H | 30x30 | 1/4 (1/2) | 132 (136) | 0.9 |
| SMV-..15H | 40x40 | 3/4 (1) | 156 (150) | 1.7 |
| SMV-..17H | 40x40 | 3/4 (1) | 156 (150) | 1.7 |
| SMV-..19H | 50x50 | 1 1/4 | 165 | 2.9 |

*with NPT-thread

3. Flow meter and switches with 1 contact model: SMV-3...



| Model | Square (mm) | Thread G | L (mm) | Weight (kg) |
|-----------|-------------|------------|------------|-------------|
| SMV-..01H | 30x30 | 1/4 (1/2*) | 132 (136*) | 0.9 |
| SMV-..03H | 30x30 | 1/4 (1/2) | 132 (136) | 0.9 |
| SMV-..05H | 30x30 | 1/4 (1/2) | 132 (136) | 0.9 |
| SMV-..07H | 30x30 | 1/4 (1/2) | 132 (136) | 0.9 |
| SMV-..09H | 30x30 | 1/4 (1/2) | 132 (136) | 0.9 |
| SMV-..11H | 30x30 | 1/4 (1/2) | 132 (136) | 0.9 |
| SMV-..13H | 30x30 | 1/4 (1/2) | 132 (136) | 0.9 |
| SMV-..15H | 40x40 | 3/4 (1) | 156 (150) | 1.7 |
| SMV-..17H | 40x40 | 3/4 (1) | 156 (150) | 1.7 |
| SMV-..19H | 50x50 | 1 1/4 | 165 | 2.9 |

*with NPT-thread