

All-Metal Flow Meters and Switches for Liquids



- Measuring Range:
0.05–1.0 to 10–110 l/min
water
- Accuracy: $\pm 5\%$ f. s.
- Pmax 350 bar,
Tmax 100°C
- Connection:
G 1/4 to G 1 1/4 IG
- Material:
Brass or stainless steel





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 (polypropylene)
	SMV-x2...:	Stainless steel, 1.4301
	SMV-x201...:	PVDF
Nozzle:	SMV-x1...:	Brass, Ms 58
	SMV-x2...:	Stainless steel, 1.3955
Seals:	SMV-x1...:	Buna N
	SMV-x2...:	Viton
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.	
Reproducibility:	≤ 1 %	

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

Electrical connection:	2 m cable (SMV-..F0...) 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 max. 250 V _{AC} / 100 VA / 1.5 A / I _k = 5 A)
Ex-range :	ATEX zone 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 ΔP (bar)	Float according to version		Brass	Stainless steel	Contact*	Connection female thread	
		Brass	St. steel					
0.05...1	0.02	PP	PVDF	SMV-1101H...	SMV-1201H...	...R0...=1 N/O contact ...U0...=1 changeover c. ...F0...=1 Ex N/O contact ...C0...=1 N/O contact (UL) ...D0...=1 changeover c. (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...		..R20= G 3/4 ..R25= G1 ..R32= G 1 1/4	..N20= 3/4 NPT ..N25= 1 NPT ..N32= 1 1/4 NPT
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 ΔP (bar)	Float according to version		Brass	Stainless steel	Contact	Connection female thread	
		Brass	St. steel					
0.05...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...		..R20= G 3/4 ..R25= G1 ..R32= G 1 1/4	..N20= 3/4 NPT ..N25= 1 NPT ..N32= 1 1/4 NPT
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...

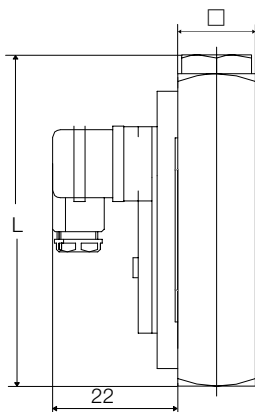
(Example: SMV-3205H E0 R08)

Measuring range l/min. water	Pressure loss ΔP (bar)	Float according to version		Brass	Stainless steel	Contact	Connection female thread	
		Brass	St. steel					
0.05...1	0.02	PP	PVDF	SMV-3101H...	SMV-3201H...	...R0...=1 N/O contact ...U0...=1 changeover c. ...F0...=1 Ex N/O contact ...C0...=1 N/O contact (UL) ...D0...=1 changeover c. (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...		..R20= G 3/4 ..R25= G1 ..R32= G 1 1/4	..N20= 3/4 NPT ..N25= 1 NPT ..N32= 1 1/4 NPT
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

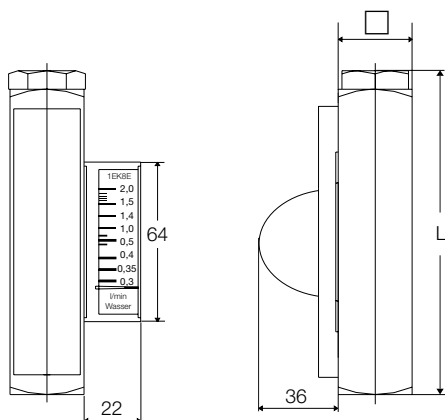
1. Flow switches with 1 contact model: SMV-1...



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

* at NPT-thread

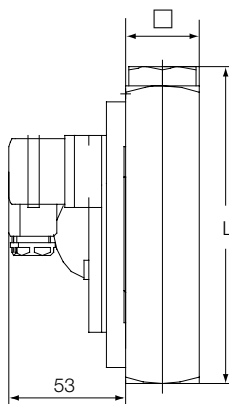
2. Flow meter model: SMV-2...



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

* at 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

* at NPT-thread

All-Metal Flow Meters and Switches for Liquids



- Measuring Range:
10-180 / 10-250 L/min
water
- Accuracy: $\pm 5\%$ f. s.
- $p_{\max}$ 350 bar,
 $t_{\max}$ 100 °C
- Connection:
G 1 1/4 IG, 1 1/4 NPT
- Material:
Brass or stainless steel



KOBOLD offices exist in the following countries:

ARGENTINA, AUSTRIA, BELGIUM, BRAZIL, CANADA, CHINA,
FRANCE, GERMANY, GREAT BRITAIN, ITALY, NETHERLANDS,
PERU, POLAND, SWITZERLAND, USA, VENEZUELA

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Model:
SMV-...21H
SMV-...22H



Description

KOBOLD flow meters and -switches series SMV...21H and SMV...22H are equipped with a spring loaded float which is guided within a cylindrical measuring pipe and in opposit to the principals known up to now it is hollow. The medium flows through a circular clearance which is built by the bore of the float and the mandrel bar (conical shaft) inside.

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

Mandrel bar and stop ring: SMV-x1...: Brass, Ms 58
SMV-x2...: Stainless steel, 1.4301

Float: Oxide, Ceramic (magnets) and
SMV-x1...: Brass, Ms 58
SMV-x2...: Stainless steel, 1.4301

Spring: Stainless steel 1.4310

Max. temperature: 100 °C

Max. pressure: SMV-x1...: 250 bar
SMV-x2...: 350 bar

Installation position: independant

Accuracy: $\pm 5\%$ f. s.

Reproducibility: $\leq 1\%$

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

Electrical connection: 2m cable
(SMV-..F0...)
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 EEx d IIC 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 (with contact)
IP 54 (with pointer indication)

Order Details

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

(Example: SMV-1121H R0 R32)

Measuring range L/min water	Pressure loss ΔP (bar)	Float according to version		Brass	St. steel	Contact*	Connection female thread	
		Brass	St. steel					
10...180	0.9	Brass, nickel-pl.	St. steel	SMV-1121H...	SMV-1221H...	...R0...=1 N/O contact ...U0...=1 changeover contact ...C0...=1 N/O contact (UL) ...D0...=1 changeover c. (UL)	..R32 = G 1 1/4	..N32 = 1 1/4 NPT
10...250	2.0	Brass, nickel-pl.	St. steel	SMV-1122H...	SMV-1222H...		..R32 = G 1 1/4	..N32 = 1 1/4 NPT

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

Flow meter model: SMV-2...

(Example: SMV-2121H 00 R32)

Measuring range L/min water	Pressure loss ΔP (bar)	Float according to version		Brass	St. steel	Contact	Connection female thread	
		Brass	St. steel					
10...180	0.9	Brass, nickel-pl.	St. steel	SMV-2121H...	SMV-2221H...	...00...= without contact ...EX...= with ATEX-approval	..R32 = G 1 1/4	..N32 = 1 1/4 NPT
10...250	2.0	Brass, nickel-pl.	St. steel	SMV-2122H...	SMV-2222H...		..R32 = G 1 1/4	..N32 = 1 1/4 NPT

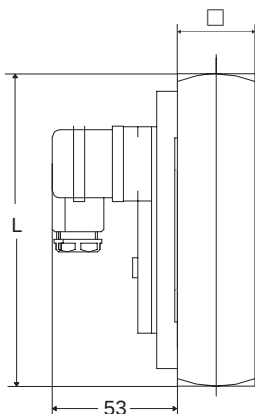
Flow meter and switches with 1 contact model: SMV-3...

(Example: SMV-3121H R0 R32)

Measuring range L/min water	Pressure loss ΔP (bar)	Float according to version		Brass	St. steel	Contact	Connection female thread	
		Brass	St. steel					
10...180	0.9	Brass, nickel-pl.	St. steel	SMV-3121H...	SMV-3221H...	...R0...=1 N/O contact ...U0...=1 changeover contact ...C0...=1 N/O contact (UL) ...D0...=1 changeover c. (UL)	..R32 = G 1 1/4	..N32 = 1 1/4 NPT
10...250	2.0	Brass, nickel-pl.	St. steel	SMV-3122H...	SMV-3222H...		..R32 = G 1 1/4	..N32 = 1 1/4 NPT

Order Details and Dimensions

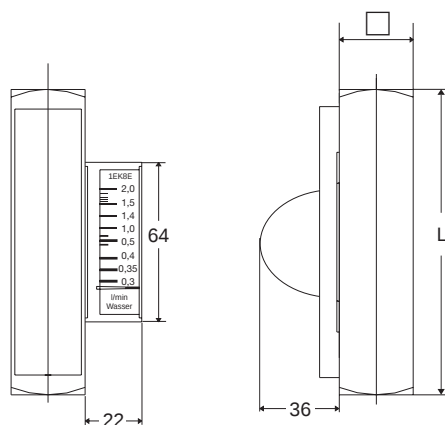
1. Flow switches with 1 contact model: SMV-1...



Model	Square (mm)	Thread G	L (mm)	Weight (kg)
SMV-1.21H	50x50	1 1/4	165 (175*)	2.6
SMV-1.22H	50x50	1 1/4	165 (175*)	2.6

*at NPT

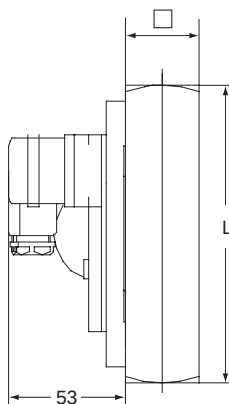
2. Flow meter model: SMV-2...



Model	Square (mm)	Thread G	L (mm)	Weight (kg)
SMV-2.21H	50x50	1 1/4	165 (175*)	2.6
SMV-2.22H	50x50	1 1/4	165 (175*)	2.6

*at NPT

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



Model	Square (mm)	Thread G	L (mm)	Weight (kg)
SMV-3.21H	50x50	1 1/4	165 (175*)	2.6
SMV-3.22H	50x50	1 1/4	165 (175*)	2.6

*at NPT