

Low flow-rates area flowmeters SGK 1-3



- **Directly readable scale**
- **Water: 0,1 – 1 l/h ... 1,2 m³/h**
- **Air: 0,3 – 3 l/h ... 16 m³/h**
- **Measuring glass tube: borosilicate glass**
- **Connections: G 1/4" or G 1/2"**
- **Options:**
 - **Metering valve**
 - **Limit value switch**
 - **4 ... 20 mA output**

APPLICATIONS

Flowmeters SGK 1-3 are used for direct reading and measuring of low flow-rates on liquids and gases. They are designed for reduced space, in laboratory and in technical rooms.

DESCRIPTION

The measuring principle is that of the variable area flowmeter, the float is moved by the fluid inside a calibrated conical glass tube. The glass tube (3) is sealed at each end by an O-ring and protected against damage by a flat gasket (inserted in the parts 1 and 2).

These flow meters can be equipped with a metering valve for fine dosing and limit switches for remote monitoring. The switching output can be connected to a PLC or a monitoring device. SGK 2 and 3 can be equipped with a Hall effect linear position sensor for transmitting a 4 ... 20 mA or 0 ... 10 V signal.

Model series:

SGK-1	for smallest flows of air and water
SGK-2	for small to medium flows of air and water
SGK-3	low flows of air and water
...-MSK1	with bistable Reed contact N.C.
...-MSK12	with bistable Reed contact N.O.
...-MSKW	with changeover Reed contact
...-RC ¹⁾	with inductive limit value switch
...-EM ²⁾	with analogue output 4 ... 20 mA or 0 ... 10 V

- ¹⁾ Flow-rates < 2 l/h of water; < 80 l/h of air
²⁾ Available only for SGK 2 & SGK 3 version

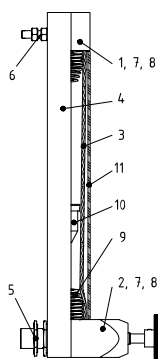
Limit value switches:

The SGK series devices can be equipped with a magnetic float and bistable electrical reed contacts that are adjustable across the entire measuring range. For small flows up to 30 l/h, detection by inductive contact series RC will be used.

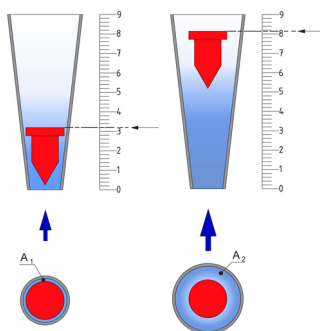
Analogue output 4 ... 20 mA or 0 ... 10 V:

The output signal is obtained by using a linear Hall effect displacement sensor. The output signal is proportional to the height of the magnetic float position. The sensor is plugged through a connector M12.

This output is useful for applications using a PLC. The device is compact with a high level of measurement repeatability.



- 1) Head (here: vertical outlet, model B)
 2) Adjustment valve (here: at bottom, type B)
 3) Conical measuring glass tube
 4) Body
 5) Fittings with nut BSP 1/4" or 1/2"
 6) Nut M5 or M8 for fastening heads
 7) O-ring seals, in 1) and 2); not shown
 8) Gaskets inside 1) & 2); Not shown



Principle

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TECHNICAL FEATURES

Fittings	Threads male or female according DIN EN ISO 228 T1 option: Hose couplings
Design	A ... Do: Refert to the table "DESIGN" (end of document)
Operating temperature	with NBR seals: max. 80 °C with FKM seals: max. 100 °C
max. Operating pressure ¹⁾	10 bar

¹⁾ no pressure surges

Measuring tube

Reading scale	Printed scale
Graduated scale length	SGK 1-2: ~150 mm SGK 3: ~220 mm
Accuracy class	VDE/VDI 3513, page 2
Error limit (G)	1,6 %
Linear limit (qG)	50 %
Calibration	Optional, according to customer specifications

Materials

Body	Aluminium, black anodized
Fittings	Standard: Anodized aluminum or PVC Options: AISI 316 Ti or PVDF
Seals	Standard: NBR for aluminum version FKM for AISI 316 Ti version Options: EPDM, Perlast® (FFKM)
Conical measuring tube	Borosilicate glass
Floats for Liquids	Standard: AISI 316 Ti Options: PVC, PP, PTFE, PVDF
Floats for Gases	Standard: Aluminium Options: PVC, PP, PTFE, PVDF
Metering valve spindle	Needle: AISI 316 Ti

Other materials on request

	Reed contact features		
	MSK1	MSK2	MSKW
Function	Bistable NC	Bistable NO	Bist. Changeover
Max. voltage	50 V AC/75 V DC	50 V AC/75 V DC	50 V AC/75 V DC
Max. current	500 mA	500 mA	500 mA
Switching capacity	10 W/VA	10 W/VA	5 W/VA
Temperature ¹⁾	-20 ... +90 °C	-20 ... +90 °C	-20 ... +90 °C

¹⁾ The thermal endurance of the flow meter is crucial.

	Inductive contacts features	
	RC 10-14-N3	RC 15-14-N3
Inner diameter	10 mm	15 mm
Rated voltage	8 V DC	8 V DC
Consumption	1 mA/3 mA	1 mA/3 mA
Max. speed (float)	≤10 m/s	≤10 m/s
Self-inductance	≤120 mH	≤120 mH
Temperature range	-20 ... +70 °C	-20 ... +70 °C
Switching function	Bist., NAMUR	Bist., NAMUR



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Technical data analogue output EM 4 ... 20 mA

Measuring range [A...B]	125 mm, 160 mm
Repeatability	≤ 0.1% F.S. dependent upon position sensor
Linearity deviation	≤ 1 %
Temperature drift	≤ ±0.03 %/K
Ambient temperature ¹⁾	-25 ... +65 °C
Operating voltage	15 ... 30 V DC
Idle current	≤ 15 mA
Analogue output ²⁾	4-wire transmitter
Load resistor on 4-20 mA	≤ 0.4 kΩ
Output 0-10 V	0... 10 V
Load resistor on 0-10 V	≥ 4.7 Ω
Sampling rate	200 Hz
Connection	Plug Connector, M12 x 1
Protection	IP 67
Signaling LED	Green: Operating
Measuring range indicator	Yellow: Position sensor in detection range

¹⁾ The thermal endurance of the flow meter is crucial.

²⁾ 2-wire version available on request

MEASURING SCALES

	Range for Air STP ¹⁾	Range for Water
SGK-1	0.3 - 3 l/h 0.25 - 2.5 m³/h	0.1 - 1 l/h 15 - 150 l/h
SGK-2	6 - 60 l/h 0.58 - 5.8 m³/h	0.5 - 5 l/h 20 - 200 l/h
SGK-3	0.15 - 1.5 m³/h 1.6 - 16 m³/h	12 - 120 l/h 0.12 - 1.2 m³/h

Measuring scales for other fluids and operating conditions: On request

¹⁾ STP - Standard temperature and pressure: 0 °C and 1013 mbar ABS



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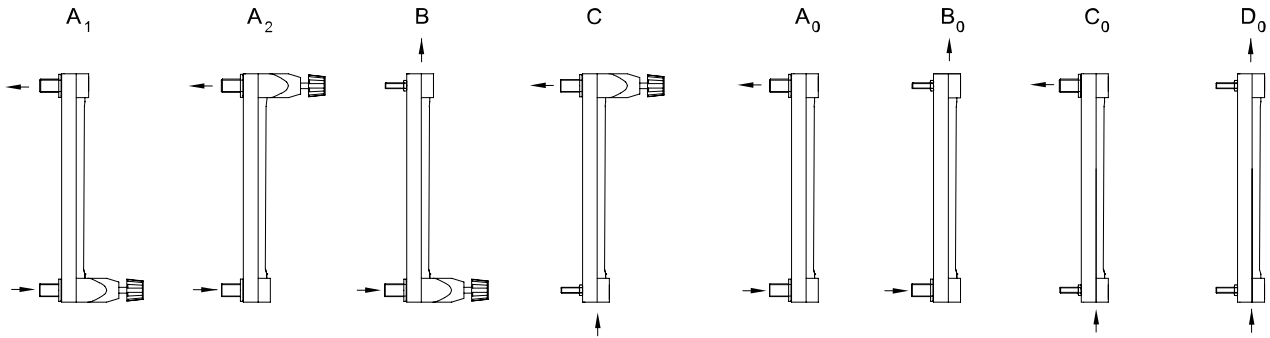
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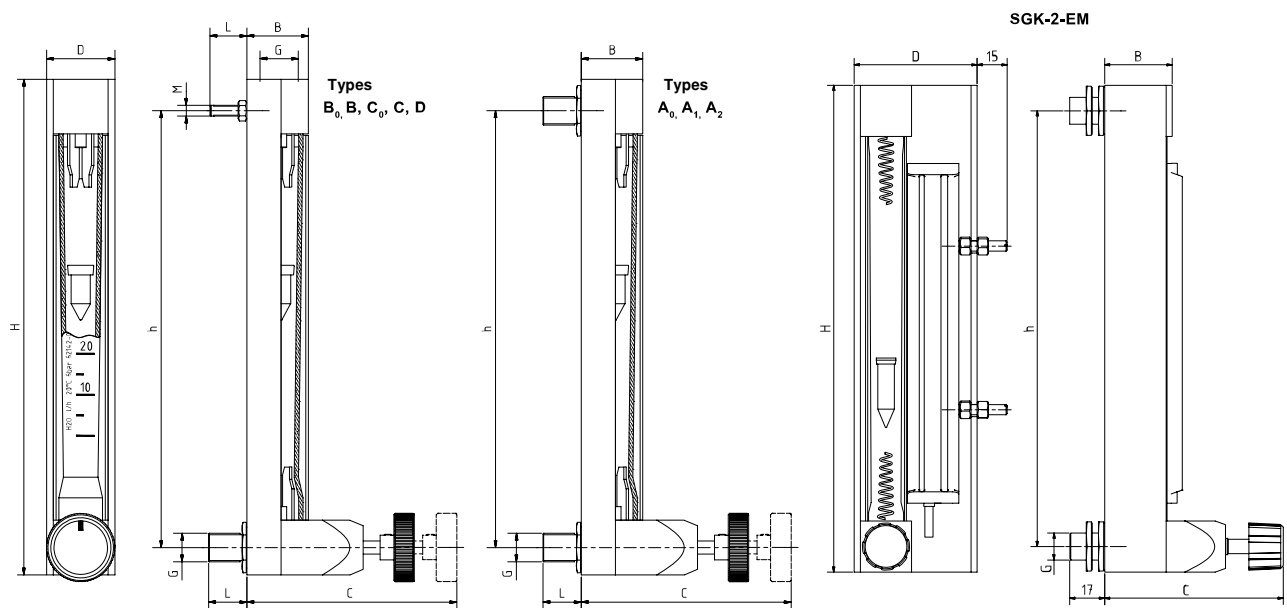
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DESIGN



DIMENSIONS



	G	Types	H [mm]	h [mm]	M	L [mm]	B [mm]	D [mm]	C max. [mm]
SGK-1	1/4"	A ₁ , A ₂ , A ₀	238	213	–	22.5 ¹⁾	27.5	30	80 (Only: A ₁ , A ₂)
SGK-2	1/4"	A ₁ , A ₂ , A ₀	238	213	–	22.5 ¹⁾	27.5	30	80 (Only: A ₁ , A ₂)
	1/4"	B, B ₀ , C, C ₀	242	211	M5	22.5 ¹⁾	27.5	30	80 (Only: B, C)
	1/4" i	D ₀	246	209	M5	22.5 ¹⁾	27.5	30	–
SGK-2-EM	1/4"	A ₁ , A ₂ , A ₀	238	213	–	17	33	60	85 (Only: A ₁ , A ₂)
SGK-3	1/2"	A ₁ , A ₂ , A ₀	363	323	–	~ 27	45	50	135 (Only: A ₁ , A ₂)
	1/2"	B, B ₀ , C, C ₀	363	320	M8	~ 27	45	50	135 (Only: B, C)
	1/2" i	D ₀	363	317	M8	~ 27	45	50	–
SGK-3-EM	²⁾	²⁾	²⁾	²⁾	²⁾	²⁾	²⁾	80	²⁾

¹⁾ SGK 1/ 2-MSK L ≈ 18 mm

²⁾ SGK 3-EM: Same dimensions and shape as the SGK 3, except for dimension D = 80 mm.

For versions with a metering valve (A₁, A₂ & C), the preferred selection is:

A₁ for liquids

A₂ & C for gases

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