VA Flow Meters

SMK

Design and applications

Wherever in plant engineering a robust and reliable device is required for the indication of momentary values and for the monitoring of flows in the pipeline, the SMK is the right choice as a reliable device for the measurement of fluids and gases. Due to the magnetic transfer of the float position to a dial gauge, the SMK is, in contrast to standard flow meters with glass tubes, also suitable for the measurement of opaque media. Each unit is calibrated to meet the requirements of the respective customer and is fitted with a scale specific for the medium to be measured.

For process control, the measuring unit can be equipped with limit value switches or a measuring transducer with electrical analogue output.

- all-metal device, display via magnetic coupling
- for minute flow rates
- high resistance to pressure and temperatures
- optionally available with a needle valve
- optionally available with an analogue output 4..20 mA
- optionally available with a limit value switch
- scale specific for the media to be measured

Kirchner und Tochter

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Version 2.0

SMK

Technical data

Accuracy class	4 acc. to VDE/VDI 3513
Replication accuracy	< 2 %
Scale	in phy. units, e.g.: l/h, m^3/h
Length of scale	60 mm
Measuring range	1:10
Cable inlet	Plug with soldering lugs
Degree of prot. of housing	IP 65
Medium temperature	
Version without switch	- 80 .. + 150 °C
Version with switch	- 20 .. + 60 °C
Perm. operating pressure	PN 40
optionally	to PN 400
Installation length	132 .. 170 mm, depend. on connection
Connections	G (DIN ISO 228), NPT (ANSI B 1.20.1), Milk tube fitting (DIN 11851), Tri-Clamp

Materials

Measuring tube	1.4404
Float	1.4404
Float holder	1.4404
Sealing face	1.4404
Display unit:	
Scale housing	Aluminium / plastic
Pointer	Aluminium / plastic
Scale	Aluminium
Axle / bearing	Stainless steel 1.4401
Disk / gasket	Methacrylate / Acrylo nitrile

Designs and connections

Ordering designation	Connection, design
SMK-Rp-R	Rp, back side
SMK-NPT-R	NPT, back side
SMK-Rp-R-V	Rp, back side with valve
SMK-NPT-R-V	NPT, back side with valve
SMK-Rp	Rp, vertical
SMK-NPT	NPT, vertical
SMK-S	Connection acc. to DIN 11851
SMK-TC	Tri-Clamp, vertical

Options

IK limit value switch with inductive slot-type initiator

The pointer in the measuring unit actuates the inductive switch inside the display housing using metal flag. The limit value switch can be adjusted across the entire measuring range. One SMK can be fitted with maximum 2 IK switches. On the measuring scale, the switch position is marked by adjustable marks.

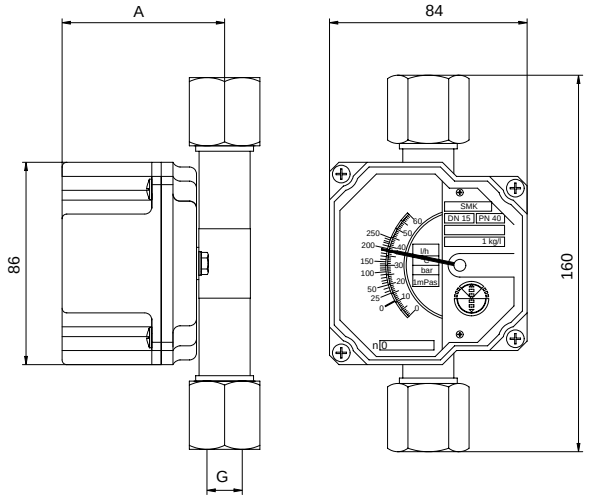
IK 1	Version with one switch
IK 2	version with two switches
Contact	Inductive slot-type initiator acc. to NAMUR DIN 19234
Switching function	Break contact / make contact depending on relay wiring
Switching performance	bistable
Power supply	8 V DC via insulating contact amplifier KFA 6 Ex (optional)
Current consumption/output	
active area free	3 mA
active area covered	1 mA
Ambient temperature	-25 °C ... +70 °C
Explosion protection	Intrinsic safety in connection with insulating contact amplifier KFA 6 Ex (optional)
Only for connection to intrinsically safe power circuits with following top values	
No-load voltage U_0	15,5 V
Short-circuit voltage I_K	52 mA
Power P	169 mW
Self-inductance (Li)	150 µH
Self-capacitance (Ci)	150 nF
Individual approval	PTB-No. Ex-95.D.2195 X

EM Electrical measuring transducer

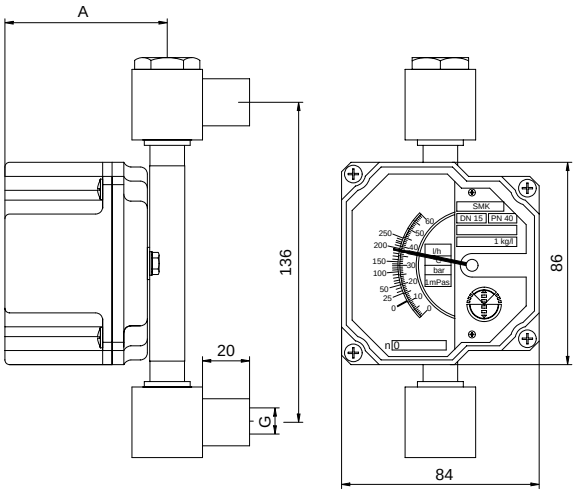
The measuring transducer uses the Hall Effect for contact free detection of the pointer position. The transducer generates a linear output signal of 4-20 mA, which is proportional to the measured flow.

Supply voltage	12 .. 50 V DC
Output signal	4 ... 20 mA DC
Current consumption	max 20 mA DC
Burden	2 kΩ at 50 V DC 700 Ω at 24 V DC
Ambient temperature	-5 °C ... +70 °C
Accuracy	< 0.6 % of display value
Connection	2-wire technology
Terminal assignment on plug	
Soldering lug 1	+
Soldering lug 2	-
Soldering lug earth	Earth

SMK-Rp



SMK-Rp-R



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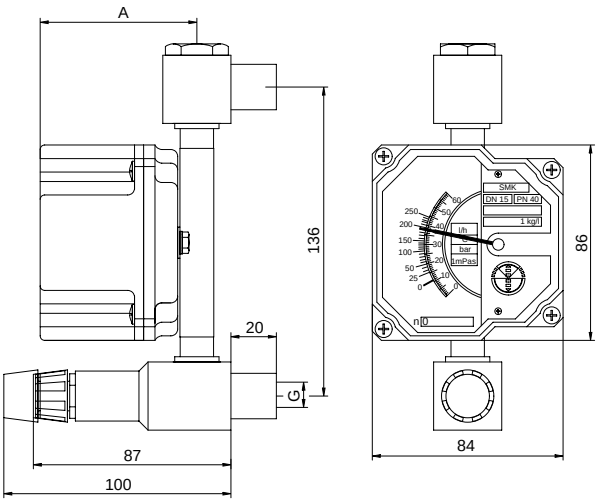
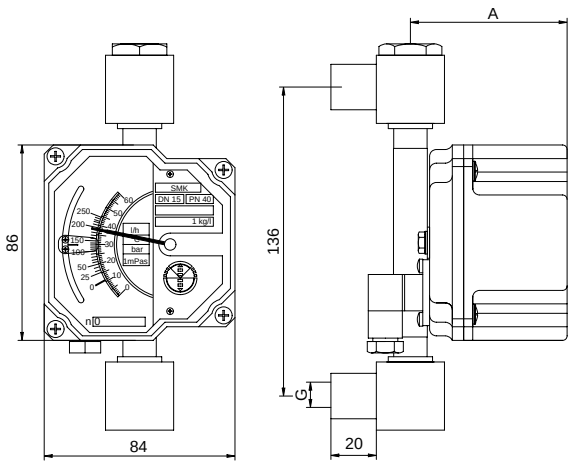


SMK-Rp-R-EM



Measuring ranges

Nominal width / Connection Rp/NPT	Tri-Clamp DN	Connection acc. to DIN 11851 DN	Measuring range l/h H_2O	Measuring range l/h at s.c. air [1]	Pressure loss for water mbar
1/4	6	6	0.1 – 1	4 – 30	28
1/4	6	6	0.2 – 2.5	8 – 80	28
1/4	6	6	0.4 – 4	12 – 120	28
1/4	8	8	1 – 10	30 – 300	30
1/4	8	8	1.6 – 16	50 – 500	30
1/4	8	8	2.5 – 25	80 – 800	30
1/4	10	10	4 – 40	120 – 1200	32
1/4	10	10	6 – 60	160 – 1800	32
1/4	10	10	10 – 100	300 – 3000	32
1/2	15	15	16 – 160	500 – 5000	34
1/2	15	15	25 – 250	750 – 7500	34
1/2	20	20	40 – 400	1200 – 12000	40
1/2	20	20	60 – 630	1800 – 18000	40
3/4	20	20	100 – 1000	3000 – 30000	40

Measuring ranges for other substances and operating conditions on request.

[1] at s.c.: at standard conditions (0 °C and 1.013 bar abs.)

Safety notes

Operate the device within the specified permitted working pressure and the permitted operating temperature only.

Avoid excessive pressure shocks.

Accessories

Electrical accessories for remote display and control, such as analogue displays, digital displays, recorders, PID-controls, limit value detectors, and arc suppresion relays can be found in our separate product data sheets.

The KIRCHNER equipment has been tested in compliance with applicable CE-regulations of the European Community.

The respective declaration of conformity is available on request.

The KIRCHNER QM-System will be certified in accordance with DIN-EN-ISO 9001:2000. The quality is systematically adapted to the continuously increasing demands.

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