

Synthetic VA Flowmeters

KM 16, KM 17 KM 18, KM 20

Operation

The flowmeters type KM 16 to KM 20 operate with the float measuring principle

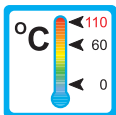


Application

The flowmeters type KM 16 to KM 20 are used for measuring volumeflow of liquid and gaseous media.



Areas of application:



– Coolingsystems and cooling-circuits



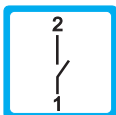
– Mechanical Engineering
e.g. Weldingmachinery,
Laserplants



– Medicine technology

– Pharmaceutical industry

– Research and development



Features

The model proves itself through reliable function and easy handling:

- high accuracy
(Accuracy class 4)
- easy to read
- Good suitability for special media by choice between 4 different materials
- Scales can be exchanged subsequently,
Special scales on request
- Glue connections or threaded connections

Installation hints

The instrument must be installed vertically in the flow circuit.

The flowdirection is from bottom to top.

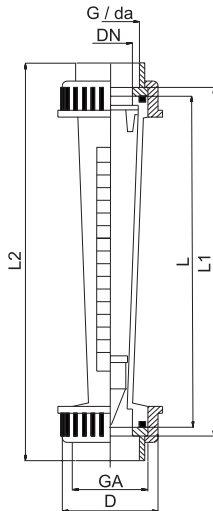
The flowmeter must not be used as a supporting part in a pipeconstruction!

The medium must not contain any solid particles!

KM16 1 0002.07-04 E M



Technical Data



Material

	Version PVC-U	Version PA	Version PSU	Version PVDF
Measuring tube	PVC-U	PA	PSU	PVDF
Float	PVDF*	PVDF*	PVDF*	PVDF*
Connection				
Glue connection	PVC			
Threaded connection				
standard:	PVC			
optional:	GTW, Brass, Stainless steel (1.4571)			
Gaskets				
standard:	EPDM			
optional:	FPM			

Standard exworks are glue connections.

*optional liquidtight encapsulated magnets (Recording of measurement)

Other versions on request!

Type	Measuring range H ₂ O [l/h]	Overall dimensions mm							Option G	Weight [g]
		da	DN	L	L1	L2	D	GA		
KM 16-02	3 - 24	16	10	165	171	199	35	3/4"	3/8"	78
KM 16-06	5 - 60	16	10	165	171	199	35	3/4"	3/8"	78
KM 16-1	10 - 100	16	10	165	171	199	35	3/4"	3/8"	78
KM 16 -2.5	25 - 250	16	10	165	171	199	35	3/4"	3/8"	78
KM 17-05	5 - 50	20	15	170	176	208	43	1"	1/2"	96
KM 17-1.5	15 - 150	20	15	170	176	208	43	1"	1/2"	96
KM 17-2.5	25 - 250	20	15	170	176	208	43	1"	1/2"	96
KM 17-4	40 - 400	20	15	170	176	208	43	1"	1/2"	96
KM 18-1.5	15 - 150	25	20	185	191	229	53	1 1/4"	3/4"	125
KM 18-4	40 - 400	25	20	185	191	229	53	1 1/4"	3/4"	125
KM 18-6	60 - 600	25	20	185	191	229	53	1 1/4"	3/4"	125
KM 18-10	100 - 1000	25	20	185	191	229	53	1 1/4"	3/4"	125
KM 20-2.5	25 - 250	32	25	200	206	250	60	1 1/2"	1"	250
KM 20-4	40 - 400	32	25	200	206	250	60	1 1/2"	1"	250
KM 20-10	100 - 1000	32	25	200	206	250	60	1 1/2"	1"	250
KM 20-15	150 - 1500	32	25	200	206	250	60	1 1/2"	1"	250

Technical data	KM-16	KM-17	KM-18	KM-20
Operating pressure max.:	see Pressure - Temperature - Diagram			
Pressure drop:	see table on page 3			
Temperature range:				
PVC-U		-10 bis +60 °C		
PA		+5 bis +75 °C		
PSU		+5 bis +100 °C		
PVDF		0 bis +110 °C		
Accuracy:	Accuracy class 4 according to VDE / VDI 3513 page 2			

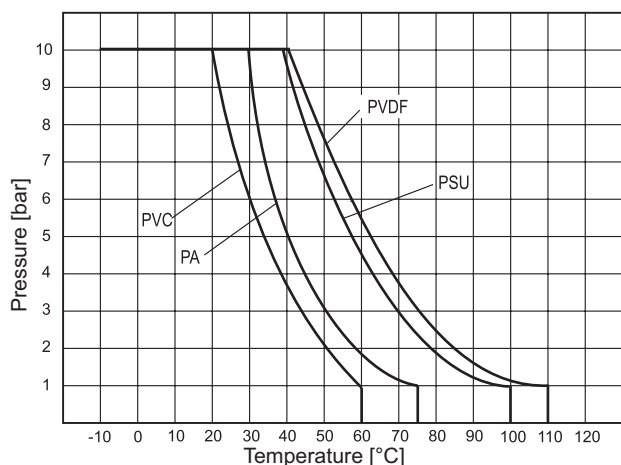
Pressure - Temperature - Diagram

The curves of the diagram present approximate values of the resistance of four different materials in relation to the operating temperature.

Pressure - temperature curves are valid for a calculated life - time of 20 years.

Among other factors the creep strength of the different materials must be considered when determining the permissible operating pressure.

As far as these details or operating temperatures under 0 °C are concerned, we ask you to inform us about the exact operating conditions.



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Measuring ranges for water and air

Type	Range H ₂ O [l/h]	Pressure drop H ₂ O at 20 °C [mbar]	Range Air, 20 °C, 0 - 0,2 bar rel. [Nm ³ /h]	Pressure drop Air at 20 °C [mbar]
KM 16-02	3 - 24	3,3	0,2 - 1,0	4,8
KM 16-06	5 - 60	3,3	0,2 - 3,2	4,8
KM 16-1	10 - 100	3,3	0,5 - 3,6	4,8
KM 16 -2.5	25 - 250	3,3	0,5 - 9,0	4,8
KM 17-05	5 - 50	2,5	0,4 - 2,8	4,3
KM 17-1.5	15 - 150	2,5	0,8 - 6,25	4,3
KM 17-2.5	25 - 250	2,5	0,9 - 9,5	4,3
KM 17-4	40 - 400	2,5	2,0 - 15,0	4,3
KM 18-1.5	15 - 150	6,1	0,5 - 5,5	8,3
KM 18-4	40 - 400	6,1	2,0 - 14,0	8,3
KM 18-6	60 - 600	6,1	2,5 - 22,0	8,3
KM 18-10	100 - 1000	6,1	4,0 - 34,0	8,3
KM 20-2.5	25 - 250	6,1	1,0 - 8,0	8,3
KM 20-4	40 - 400	6,1	2,0 - 14,0	8,3
KM 20-10	100 - 1000	6,1	4,0 - 34,0	8,3
KM 20-15	150 - 1500	6,1	5,0 - 50,0	8,3

Type	Range Air 1 bar [Nm ³ /h]	Range Air 2 bar [Nm ³ /h]	Range Air 3 bar [Nm ³ /h]	Range Air 4 bar [Nm ³ /h]	Range Air 5 bar [Nm ³ /h]	Range Air 6 bar [Nm ³ /h]	Range Air 7 bar [Nm ³ /h]	Range Air 8 bar [Nm ³ /h]
KM 16-02	0,2 - 1,3	0,25 - 1,6	0,3 - 1,75	0,3 - 1,9	0,3 - 2,1	0,3 - 2,2		0,3 - 2,3
KM 16-06	0,4 - 3,2	0,2 - 3,8	0,3 - 4,4	0,3 - 4,8	0,3 - 5,1	0,25 - 5,25	0,4 - 5,8	0,3 - 6,0
KM 16-1	0,6 - 5,0	0,8 - 6,0	0,8 - 7,0	0,8 - 7,8	0,8 - 8,0	1,0 - 8,7		1,0 - 9,0
KM 16 -2.5	1,0 - 13,0	1,0 - 16,0	1,5 - 18,0	1,5 - 20,0	2,0 - 23,5	2,0 - 26,0		
KM 17-05	0,2 - 3,2	0,5 - 4,0	0,5 - 4,5	0,3 - 4,6	0,5 - 5,5	0,5 - 5,5		0,5 - 6,5
KM 17-1.5	1,0 - 9,0	1,0 - 11,0	1,5 - 12,0	1,0 - 13,0	1,5 - 15,0	1,5 - 16,0	2,0 - 17,0	2,0 - 18,0
KM 17-2.5	1,5 - 13,0	2,0 - 17,0	2,0 - 20,0	1,5 - 22,0	2,0 - 23,5	4,0 - 26,0	2,0 - 28,0	
KM 17-4	2,0 - 21,0	3,0 - 26,0	3,0 - 30,0	3,0 - 33,0	3,0 - 36,0	4,0 - 40,0		
KM 18-1.5	1,0 - 8,5	1,0 - 11,0	1,0 - 10,5	1,5 - 13,5	1,5 - 15,0	1,0 - 12,0		
KM 18-4	2,0 - 20,0	3,0 - 26,0	4,0 - 30,0	3,0 - 33,0	4,0 - 36,0	4,0 - 38,5		4,0 - 40,0
KM 18-6	4,0 - 31,0	4,0 - 38,0	5,0 - 45,0	5,0 - 48,0	6,0 - 54,0	5,0 - 57,5		6,0 - 66,0
KM 18-10	5,0 - 45,0	6,0 - 58,0	7,5 - 67,5	7,5 - 72,5	8,0 - 80,0	10,0 - 90,0	10,0 - 100	
KM 20-2.5	1,5 - 13,0	1,5 - 16,0	1,5 - 17,0	2,0 - 18,0	2,0 - 19,0	2,0 - 20,0		
KM 20-4	2,0 - 20,0	3,0 - 26,0	3,0 - 30,0	3,0 - 33,0	4,0 - 34,0	4,0 - 38,5		
KM 20-10	4,0 - 46,0	5,0 - 55,0	6,0 - 66,0	7,5 - 72,5	8,0 - 80,0	8,0 - 90,0	7 - 95	
KM 20-15	6,0 - 70,0	7,5 - 90,0	7,5 - 100	10,0 - 120	10,0 - 130	10,0 - 140	10 - 150	

The measuring ranges indicated in the table are approximate values at 20 °C.
Other measuring ranges and gases on request!

Caution: Do not use PVC - measuring tubes with Air / Gas - Application !

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Limitswitch, Measuring Sensor

Limitswitch SG-KM

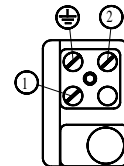
The limitswitches SG-KM serve as event marker for min., max. or any inbetween value of the flow. They are fitted on the dove-tail of the measuring tube and trigger a signal when the float reaches or passes the switch. As soon as this happens the reed contact opens or closes. For this function the float must contain magnets.



SG-KM

Type SG-KM-MO-S monostable (normally open)

The contact is closed, when the float is in line with the limitswitch. It opens (event) as soon as the float moves up or down away from the switch, which means increasing or decreasing flow.



Connection allocation

The polarity of the connectors does not influence the function

Type SG-KM-BI-S/Ö bistable (normally open or normally closed)

The normally open contact closes as soon as the magnetfloat approaches (coming from the bottom) the limitswitch or is in line with the same. When overriding the limitswitch, the switchcondition remains. Only when overriding the limitswitch, the switchcondition will be cancelled.

The normally closed contact is closed under noflow condition and open under flow condition.

Remark: Before the first start up, the float has to pass the limitswitch at least 3 times in order to cancel the monostable behaviour!

Technical Data			
Operating voltage:	max. 230 V AC	Operating temperature:	0 °C bis +55 °C
Switch current:	max. 0,5 A	Ingress protection:	IP 65 (DIN 40050)
Switch power:	max. 10 W / 10VA	Hysteresis:	3 mm
Switch resistance:	< 150 mΩ	Dimensions:	34 x 17 x 41 mm
Insulating resistance:	> 10 ¹¹ Ω	Weight (incl. plug):	40 g

The electrical max. values must not be exceeded!

Measuring Sensor KME-3000

The KME-3000 detects the position of the magnetic float in the KM and generates a 4 ... 20 mA - signal.

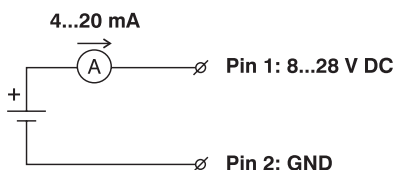
Existing flow meters (with magnetic floats) can be upgraded easily.

This micro-processor controlled unit has to be programmed device-specific by Meister, therefore the customer has to specify the type of the flowmeter.

Screw clamps are used to fit the KME-3000 on the dovetail guide of the flowmeter. The plug connector is located in the upper section. During the installation, ensure that the notch of the KME-3000 coincides with the 50% mark on the flowmeter.



Wiring diagram

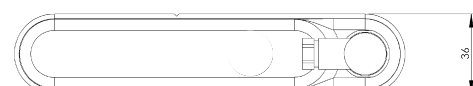
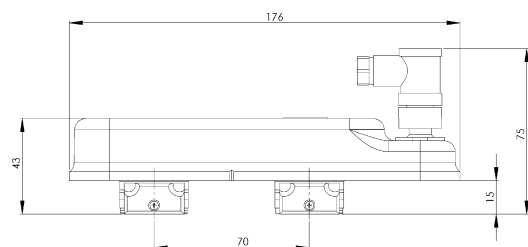


Once installed and the voltage is applied, press the 0 button (refer to right picture) for at least 2 sec to compensate surrounding magnetic influences. During this phase ensure that the float is in its bottom position i.e. no flow must take place.

During normal operation the 0 button must not be actuated! **0 button**



Technical Data		
Characteristics	Power supply	8...28 V DC
2-wire	Output	analog, 4 - 20 mA
Programming adapted to the specific KM	Output current 0 % → 100 % + Overrange	
Non-volatile value storage	During normal operation (Pin 1 - Pin 2)	
11-point calibration	Min:	4.0 → 20.1 mA
Lower limit value (low-cutoff): 0...99 % *	Typ.	4.0 → 21.0 mA
Factory settable time lag (low-pass-filter): 0.1...2.5s*	Max.	4.0 → 22.0 mA
0 button to compensate the surrounding magnetic influences	Connection	2-pole plug
Measuring accuracy better than 0.5 %	Ingress protection	IP 65
* adjustment according to customer requirements	Operating temperature	-30 ... +65 °C
	Material	plastics



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