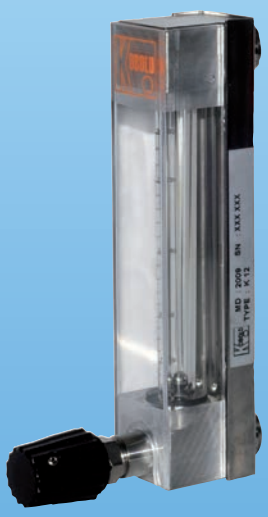
Zertifiziertes QM-System
DIN EN ISO 9001
Zertifikat-Nr. 01017

Flow Meters and Switches for very Low Flows

KDF for liquids · KDG for gases

measuring • monitoring • analysing

KDF/KDG



- Flow rates: water 0.25 - 2.5 … 16 - 160 l/h
  air 0,5 - 5 … 500 - 5000 Nl/h
- Accuracy: ±2.5 % q_G = 50 %
- p_{max}: PN 16; t_{max}: 100 °C
- Connection: ¼" NPT female or G ¼ female
- Material: stainless steel

S1

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KOBOLD Messring GmbH
Nordring 22-24
D-65719 Hofheim/Ts.
Head Office:
+49(0)6192 299-0
+49(0)6192 23398
info.de@kobold.com
www.kobold.com

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Method of Operation

The flow meters and switches for very low flows model KDF and KDG for liquids and air operate on the suspended float principle: that is, the installation position is vertical and the direction of flow is from bottom to top.

The instruments have been designed as simple and thus economical measuring systems. The float is a ball, whereby the indication point is the upper edge of the ball. A needle valve is fitted as standard.

Areas of Application

KDF- and KDG-versions

KDF-... for liquids

KDG-... for gases

Technical Data

Installation position:	vertical, flow from bottom
Accuracy:	±2.5% q_G 50 ±3% of full scale (upstream pressure controller) ±5% of full scale (downstream pressure controller) (within 10-100% of measuring range) acc. VDE/VDI 3515 page 2
Max. pressure:	PN16
Process temperature:	-20 °C ... +100 °C -20 °C ... +70 °C with contact
Ambient temperature:	-20 °C ... +100 °C -20 °C ... +70 °C with contact
Protection type:	IP65 (EN60529)
Repeatability:	±1,0 % FS
(Differential pressure regulator):	±1,5 % / 2,5 % FS
Connection:	¼" NPT; G ¼ (female backward)
Option:	hose nozzle for 8 mm hose
Weight:	approx. 0.45 kg approx. 0.8 kg with controller

Materials (in contact with the media)

Fitting:	stainless steel 1.4401
Measuring tube:	borosilicate glass
Float stop:	Hostaflon ET
Float:	stainless steel 1.4404
Gasket:	FPM, option FFKM
Valve stem:	stainless steel 1.4404
Valve seat:	PTFE 25% C (carbon fibre)
Hose nozzle:	Polyamide

ATEX approval

(on request from our sister company Heinrichs, Model: K12)

Explosion protection:	⟨Ex⟩ II 2GD IIC TX (for mech. instrument)
Contacts ignition category:	PTB 00 ATEX 2128 X II 2G Ex ia IIC T6-T4 (c/w limit switches)

Limit switches (Option)

The flow meters can be fitted with limit switches as an option. These limit switches are ring-type proximity switches. The electrical connection is via a 2 m cable or junction box.

The electrical characteristic values for all types are according to DIN 19234 (NAMUR).

Isolation switching amplifiers are necessary to operate these ring-type proximity switches (see Accessories brochure Z2).

The following types are available:

Monostable

Are used preferably as Min. or Max. contact.

Bistable

As limit contact used at any position of the measuring tube.

Important! The contact cannot be switched at the relative upper range value from product size KDF-2239 and KDG-2257 upward.

Differential pressure controllers (Option)

Differential pressure controllers are suitable for maintaining a constant flow rate of liquid and gaseous products in pipelines. The differential pressure controller consists of stainless steel with an integrated membrane made of FPM or PTFE and a counterbalance valve of stainless steel.

The membrane of the controller is in balanced condition when the pressure conditions on both sides are equal. The pressure on the incoming side is determined by the medium pressure. The pressure on the output side is determined by the pressure loss of the adjustment valve at the flow meter.

During a one-sided pressure change on the incoming or output side, a pressure compensation takes place across the integrated diaphragm valve which holds the setted flow rate constant.

The version to use for gases for constant upstream pressure is “valve up” and for constant downstream pressure “valve down”.

For liquids the valve position is without effect on the function of measuring device.

Important! The controller can only regulate the pressure fluctuations of inlet or outlet. The pressure condition of the other side has to be stable

Min.- pressure difference between inlet and outlet side: 350 mbar.

Max.- load of membrane at one-side load: 7 bar

Two types are available:

Upstream pressure controller (KDF-/KDG- ...E, F)

Upstream pressure controllers hold the flow for gases and liquids constant with variable upstream pressure and constant downstream pressure.

Downstream pressure controller (KDF-/KDG-...A, B)

Downstream pressure controllers hold the flow of gaseous media and liquids constant with variable downstream pressure and constant upstream pressure. Preferably, these should be used for liquids.

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Standard with needle valve

Panel mount

with differential pressure controller

Liquids Order Details (Example: **KDF-2217 NV 0 M10**)

Measuring range water [l/h]	Valve seat [mm]	Pressure Drop [mbar]	Order no. stainless steel	Connection	Gasket option	Panel installation kit	Contact option	Miscellaneous options
0.25 - 2.5	**1.2**	**10**	**KDF-2217...**	**N** = ¼" NPT **R**[4] = G ¼ **W** = hose connector angular, 90°, for 8 mm hose **S** = hose connector straight, for 8 mm hose **Y** = special	**V** = FPM **T** = FFKM	**0** = without **S**[4)5)] = with	**00** = without contact **upto model KDF-2220 with 2 m cable** **M1** = 1 monostable contact **M2** = 2 monostab. contacts **N1** = 1 bistable contact **N2** = 2 bistable contacts **with junction box**[3] **A1** = 1 monostable contact **A2** = 2 monostab. contacts **B1** = 1 bistable contact **B2** = 2 bistable contacts **from model KDF-2225 mit 2 m Kabel** **M3** = 1 monostable contact **M4** = 2 monostab. contacts **N3** = 1 bistable contact **N4** = 2 bistable contacts **with junction box**[3] **A3** = 1 monostable contact **A4** = 2 monostab. contacts **B3** = 1 bistable contact **B4** = 2 bistable contacts	**0** = without **E** = differential pres. contr. with constant outlet pressure, valve at input ¼" NPT, FPM **A** = differential pres. contr. with constant inlet pressure, valve at output ¼" NPT, FPM **F** = as 'E' however with FFKM instead of FPM **B** = as 'A' however with FFKM instead of FPM **Y** = e. g. without valve. Please specify in writing
0.5 - 5	**1.2**	**20**	**KDF-2220...**					
1.2 - 12	**2.8**	**10**	**KDF-2225...**					
2.5 - 25	**2.8**	**20**	**KDF-2228...**					
4 - 40	**2.8**	**30**	**KDF-2230...**					
6 - 60	**2.8**	**80**	**KDF-2235...**					
10 - 100	**2.8**	**125**	**KDF-2239...**[1)]					
12 - 120	**3.4**	**200**	**KDF-2240...**[1)]					
16 - 160	**3.4**	**200**	**KDF-2241...**[1)]					
other liquids	**on request**	**on request**	**KDF-22YY...**					

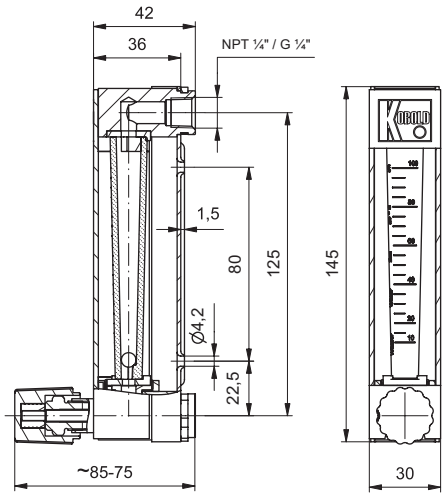
Gas Ordering Details (Example: **KDG-2207 NV 0 M10**)

Measuring range air[2)] [Nl/h]	Valve seat [mm]	Pressure Drop [mbar]	Order no. stainless steel	Connection	Gasket option	Panel installation kit	Contact option	Miscellaneous options
0.5 - 5	**1,2**	**15**	**KDG-2207...**	**N** = ¼ NPT **R**[4] = G ¼ **W** = hose connector angular, 90°, for 8 mm hose **S** = hose connector straight, for 8 mm hose **Y** = special	**V** = FPM **T** = FFKM	**0** = without **S**[4)5)] = with	**00** = without contact **upto model KDG-2224 with 2 m cable** **M1** = 1 monostable contact **M2** = 2 monostab. contacts **N1** = 1 bistable contact **N2** = 2 bistable contacts **with junction box**[3] **A1** = 1 monostable contact **A2** = 2 monostab. contacts **B1** = 1 bistable contact **B2** = 2 bistable contacts **from model KDG-2229 with 2 m cable** **M3** = 1 monostable contact **M4** = 2 monostab. contacts **N3** = 1 bistable contact **N4** = 2 bistable contacts **mit with junction box**[3] **A3** = 1 monostable contact **A4** = 2 monostab. contacts **B3** = 1 bistable contact **B4** = 2 bistable contacts	**0** = without **E** = differential pres. contr. with constant outlet pressure, valve at input ¼" NPT, FPM **A** = differential pres. contr. with constant inlet pressure, valve at output ¼" NPT, FPM **F** = as 'E' however with FFKM instead of FPM **B** = as 'A' however with FFKM instead of FPM **Y** = e. g. without valve. Please specify in writing
0.8 - 8	**1,2**	**15**	**KDG-2209...**					
1.6 - 16	**1,2**	**15**	**KDG-2213...**					
4 - 40	**1,2**	**20**	**KDG-2221...**					
6 - 60	**1,2**	**25**	**KDG-2224...**					
10 - 100	**2,8**	**15**	**KDG-2229...**					
25 - 250	**2,8**	**15**	**KDG-2232...**					
50 - 500	**2,8**	**15**	**KDG-2237...**					
80 - 800	**2,8**	**20**	**KDG-2242...**					
100 - 1000	**2,8**	**25**	**KDG-2246...**					
180 - 1800	**2,8**	**80**	**KDG-2251...**					
240 - 2400	**2,8**	**125**	**KDG-2257...**[1)]					
300 - 3000	**2,8**	**150**	**KDG-2261...**[1)]					
400 - 4000	**3,4**	**200**	**KDG-2264...**[1)]					
500 - 5000	**3,4**	**200**	**KDG-2268...**[1)]					
other gase	**on request**	**on request**	**KDG-22YY...**					

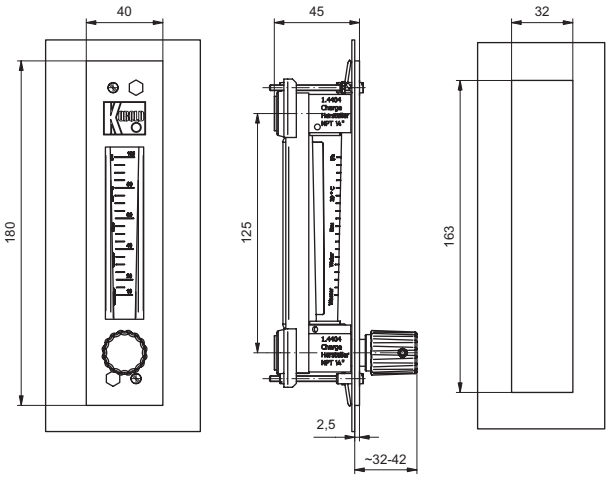
[1)] the limit switch is only available as a min. contact.
[2)] at 1.2 bar absolute and 20 °C
[3)] not with panel installation kit
[4)] not with differential pressure controler
[5)] not with junction box

Dimensions [mm]

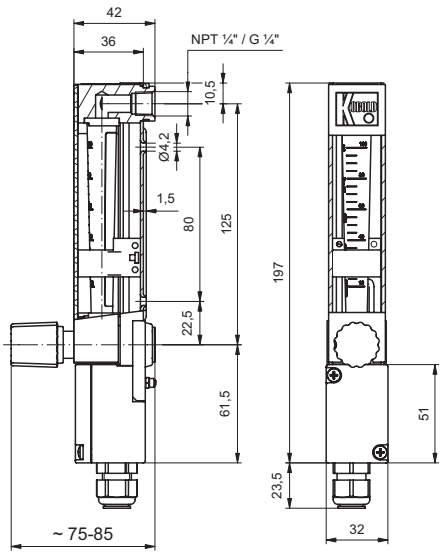
Standard with needle valve



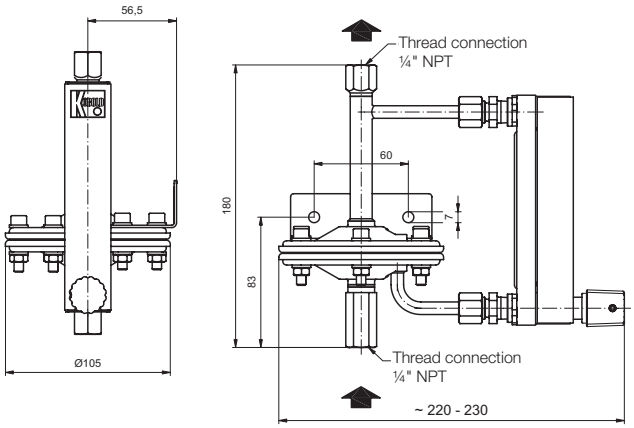
with Panel installation kit



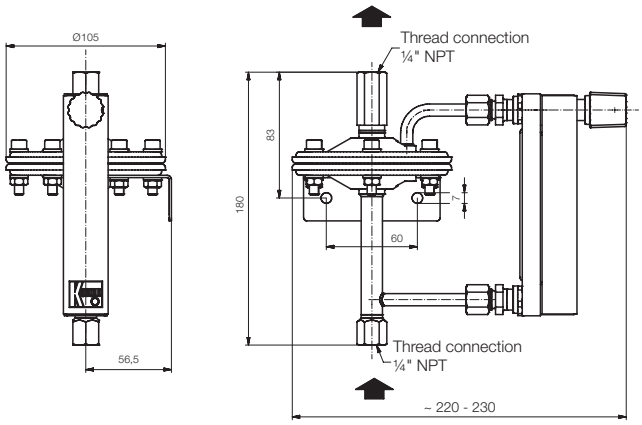
with contacts and junction box



with differential pressure controller with constant outlet pressure



with differential pressure controller with constant inlet pressure



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