KDG/KDF
MICRO FLOWMETER AND SWITCH

Flow
Pressure
Level
Temperature
measurement
monitoring
control

S1

- **±2.5% Full Scale Accuracy**
- **Integral Flow Control Valve**
- **Easy to Read Scale with Contrasting Background**
- **Brass and Glass, or SS and Glass Construction**
- **Direct Reading Scales for Water and Air**
- **Compact, Economical Design**
- **Panel Mounting Kit**

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Model:
KDG/KDF

Features

- ±2.5% Full Scale Accuracy
- Integral Flow Control Valve
- Easy to Read Scale with Contrasting Background
- Brass and Glass, or SS and Glass Construction
- Direct Reading Scales for Water and Air
- Compact, Economical Design
- Panel Mounting Kit Optional

The KDG/KDF micro flowmeters operate on the float principle and are designed to measure low gas and liquid flows. Flow can be set exactly within the measuring range using the integral precision metering valve. The contrasting color background of the scale permits accurate data readings. Additionally, 1 or 2 adjustable switches may be mounted to identify certain flow conditions. A panel mounting kit is available as an option.

Options

1. Limit Switches
All meter ranges which have a stainless steel float can be fitted with optional, adjustable switches. Two types are available:

Monostable: Switch activates momentarily as the stainless steel float passes by on rising flow.
Bistable: Switch stays activated until the float falls past the switch on decreasing flow.

Switch Specifications
Output Type: NAMUR per DIN 19234 (use EX-3001 or EX-3002 as isolation relay, sold separately)

2. Junction Box
A junction box is available for flowmeters with switches. The Junction-box contains a terminal block to facilitate making wiring connections. Flowmeters with switches which do not have a junction box will have wiring connections made via wire-leads fed through the bottom of the meter body.

3. Constant Flow Controllers
Two types of constant flow controllers are available. Types RE and NRE upstream pressure controllers. They hold flowrate constant when there is a varying downstream pressure and constant upstream pressure. All regulators are available in nickel-plated steel or brass.

4. Panel Mounting Kit
All flowmeters are available with an attached panel mounting plate and mounting hardware. The mounting plate is made of anodized Aluminum. The panel cut-out required to accommodate the panel mounting plate is 3.15” x 1.57” (80mm X 40 mm).

5. Custom Scales
Custom, direct reading scales are available for the KDG and KDF series. The custom scales allow for a direct reading, calibrated for specific gravity, viscosity operating pressure or temperature. Any desired measuring units are possible.

Specifications

Accuracy: ±2.5% full scale
Repeatability: ±0.6% full scale
Connection: NPT 1/4″
Mounting position: Vertically, media flow from bottom to top.
Max. Pressure
Brass or SS Fitting: 145 PSIG
PVDF Fitting: 85 PSIG
Max. Temperature: 210°F
Fittings: brass, 316-Ti SS, or PVDF
Measuring cone: Borosilicate glass with yellow background
Float stop: PVDF
Gaskets: Viton, or Chemraz
Valve: 316-Ti SS
Contact: (optional) bistable or monostable proximity switch for units with SS floats.

Liquids

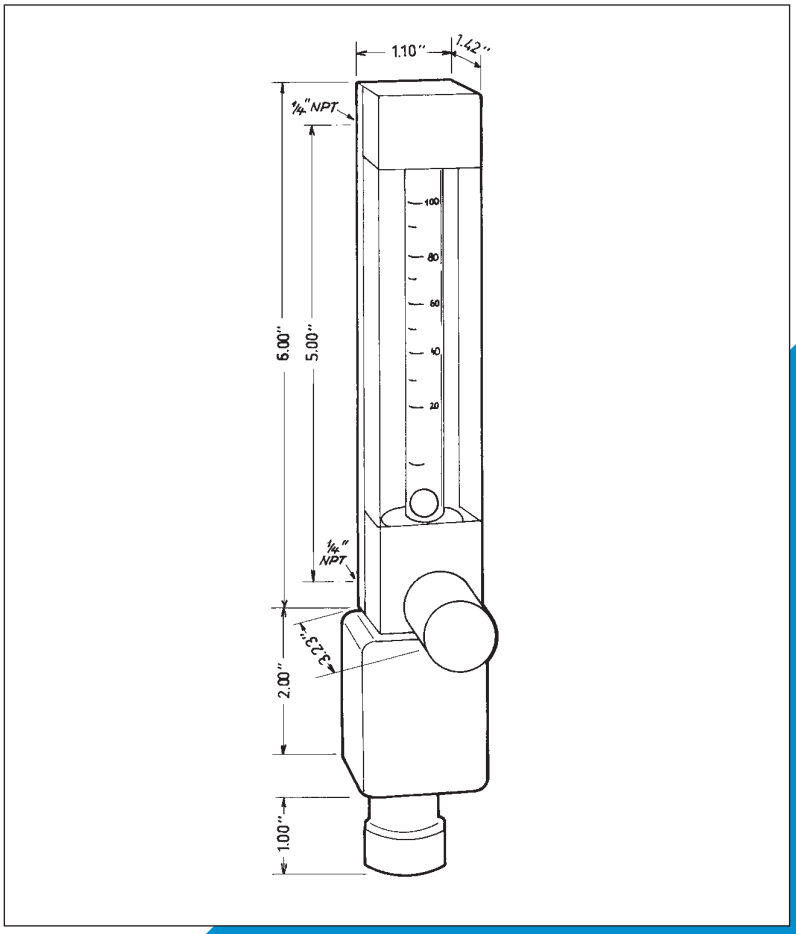
Order Details (Example: KDF-117NV0M2)

Range l/h water	Order no. brass	Order no. stainless steel	Order no. PVDF	Connection	Gasket option	Panel mount kit	Switch option
0.25-2.5	KDF-1117...	KDF-1217...	KDF-1317...	N=1/4 NPT R=1/4 BSP	V=Viton T=FFKM (Chemraz)	0=without S=with	00=without switch for model KDF-xx17 **without junction box** M1=1 monostable switch M2=2 monostable switches **with junction box** A1=1 monostable switch A2=2 monostable switches B1=1 bistable switch B2=2 bistable switches for all other models **without junction box** M3=1 monostable switch M4=2 monostable switches **with junction box** A3=1 monostable switch A4=2 monostable switches B3=1 bistable switch B4=2 bistable switches
0.5-5	KDF-1120...	KDF-1220...	KDF-1320...				
1.2-12	KDF-1125...	KDF-1225...	KDF-1325...				
2.5-25	KDF-1128...	KDF-1228...	KDF-1328...				
4-40	KDF-1130...	KDF-1230...	KDF-1330...				
6-60	KDF-1135...	KDF-1235...	KDF-1335...				
10-100	KDF-1139...	KDF-1239...	KDF-1339...				
12-120	KDF-1140...	KDF-1240...	KDF-1340...				
16-160	KDF-1142...	KDF-1242...	KDF-1342...				
other liquids	KDF-11YY...	KDF-12YY...	KDF-13YY...				

Gases

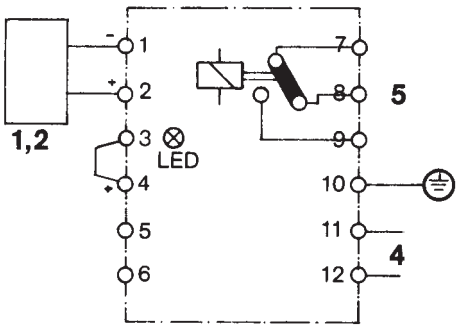
Order Details (Example: KDG-1107NV0M2)

Range l/h air	Order no. brass	Order no. stainless steel	Order no. PVDF	Connection	Gasket option	Panel mount kit	Switch option
0.5-5	KDG-1107...	KDG-1207...	KDG-1307...	N=1/4 NPT R=1/4 BSP	V=Viton T=FFKM (Chemraz)	0=without S=with	00=without switch up to model KDG-xx24 **without junction box** M1=1 monostable switch M2=2 monostable switches **with junction box** A1=1 monostable switch A2=2 monostable switches B1=1 bistable switch B2=2 bistable switches from model KDG-xx28 **without junction box** M3=1 monostable switch M4=2 monostable switches **with junction box** A3=1 monostable switch A4=2 monostable switches B3=1 bistable switch B4=2 bistable switches
0.8-8	KDG-1109...	KDG-1209...	KDG-1309...				
1.6-16	KDG-1113...	KDG-1213...	KDG-1313...				
4-40	KDG-1120...	KDG-1220...	KDG-1320...				
6-60	KDG-1124...	KDG-1224...	KDG-1324...				
10-100	KDG-1128...	KDG-1228...	KDG-1328...				
25-250	KDG-1132...	KDG-1232...	KDG-1332...				
50-500	KDG-1137...	KDG-1237...	KDG-1337...				
80-800	KDG-1142...	KDG-1242...	KDG-1342...				
100-1000	KDG-1146...	KDG-1246...	KDG-1346...				
180-1800	KDG-1151...	KDG-1251...	KDG-1351...				
240-2400	KDG-1157...	KDG-1257...	KDG-1357...				
300-3000	KDG-1161...	KDG-1261...	KDG-1361...				
350-3500	KDG-1162...	KDG-1262...	KDG-1362...				
430-4300	KDG-1165...	KDG-1265...	KDG-1365...				
Other gases	KDG-11YY...	KDG-12YY...	KDG-13YY...				



Bi-stable Switch Operation
Contacts are bistable ring initiators, with 2 initiators located one above the other in one housing. This pairing permits identification of the direction of movement of the float. The ring initiator thus provides bistable switch function based on the position of the float, whether above or below the initiator block. The direction of action can be reversed by turning the ring initiators around (change over top and bottom). One transistor relay (order no. Ex 3011) is required for each circuit (double version not available).

Connection diagram



EX 1011
EX 3011

1 Ring initiator **2** Ring initiator
4 Power supply **5** Relay outputs

Constant Flow Regulators

Model Number	Material	Max. flow rate Water** l/h	Max. flow rate Air** l/h	Min. required upstream pressure p_1 p_1 in PSI
Upstream pressure controller				
RE-1000-R	stainless steel	40	1000	0.5
RE-1000-N	brass	40	1000	0.5
RE-4000-R	stainless steel	100	3400	1
RE-4000-N	brass	100	3400	1
NRE-800-R	stainless steel		800	0.2
NRE-800-N	brass		800	0.2
Downstream pressure controller		**Air** l/h**		**Min. differential pressure * p in PSI**
RA-1000-R	stainless steel	1000	0.4	
RA-1000-N	brass	1000	0.4	
RA-4000-R	stainless steel	3400	0.8	
RA-4000-N	brass	3400	0.8	
NRA-800-R	stainless steel	800	0.15	
NRA-800-N	brass	800	0.15	

*Pressure difference between upstream and downstream pressure

**Reference conditions 68°F, 14.7 PSIA