DK04

Flap Flowmeter and Switch for Low Viscosity Media

- **robust design**
- **measuring ranges 0,4...6 l/min up to 1...100 l/min**
- **output 4-20 mA, 0-10 V, frequency, pulse or switching output**
- **highly resistant to overload**
- **low pressure loss**
- **all metal version of brass or stainless steel optional (max. pressure 100 bar)**
- **high temperature version up to 110 °C optional**

Description:

The DK04 flap type flowmeter consists of a thin flexible flap which covers the complete cross section of the flow. This flap is moved by the liquid changing the position of a magnet. The magnet's position is detected by a Hall-sensor and the attached electronic unit generates a linearised electrical signal proportional to the flow. Due to the flexible flap and a special designed thrust bearing even heavy hydraulic shocks will not damage the device. Because of the small number of wetted parts the DK04 flowmeter assures high reliable operation and it is very insensitive to particles in the flow.

Typical application:

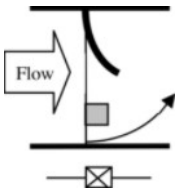
The flowmeters type DK04 are applied to monitor and supervise water or liquids similar to water up to a viscosity of 20 cSt. All applications where a high repeatability is required the DK04 flowmeters can be applied with success.

PKP Prozessmesstechnik GmbH
Borsigstr. 24 • D-65205 Wiesbaden
+49 (0) 6122-7055-0 • +49 (0) 6122 7055-50
info@pkp.de • www.pkp.de

Models:

DK04.x.x.1:	voltage output 0–10 V
DK04.x.x.2:	current output 0(4)–20 mA
DK04.x.x.3:	frequency output 10…2000 Hz
DK04.x.x.4/4M:	programmable switch PNP and NPN
DK04.x.x.5:	counting pulse

Operating Principle:



Technical Data:

Sensor:	dynamic diaphragm
Nominal size:	DN 8...25
Connection:	female thread G 1/4...G 1
Measurement accuracy:	standard ranges: ±3 % of measured value, minimum 0,25 l/min minimum value range (0,4–6,0 l/min): ±3 % of measured value, minimum 0,1 l/min
Pressure loss:	max. 0,5 bar
Pressure resistance:	plastic version: PN 16 full metal version: PN 100
Media temperature:	0...+70 °C high temperat. version.: 0...+110 °C
Ambient temperature:	0...+70 °C
Storage temperature:	-20...+80 °C

Materials with Medium-Contact:

Body:	PPS, CW614N (brass) nickelled stainless Steel 1.4404
Connections:	POM CW614N (Messing) nickelled stainless Steel 1.4404
Seals:	FKM
Diaphragm:	stainless steel 1.4031k
Magnet holder:	PPS
Back-up ring:	PVDF
Adhesive:	epoxy resin

Materials Non-Medium-Contact:

Sensor tube:	CW614N (brass) nickelled
Adhesive:	epoxy resin
Flange bolts:	stainless steel full metal construction: steel

Electrical Data:

Supply voltage:	10…30 V_{DC} 15...30 V_{DC} (for voltage output 10 V)
Power consumption:	< 1 W (for no-load outputs)
Connection:	Round plug connector M12 x 1, 4-pole
Protection class:	IP67
Indication/Display:	yellow LED
Analogue outputs:	operating voltage
frequency, pulse output.:	output status
Switching outputs:	on= normal / off = Alarm rapid flashing = programming

Output Data:

Safety:	all outputs are resistant to short circuits and reversal polarity protected
Current output:	4...20 mA (0...20 mA on request)
Voltage output:	0...10 V (2...10 V on request) output current max. 20 mA
Frequency output:	transistor output "Push-Pull" I_{out} = 100 mA max. output frequency depends on metering range, standard is 500 Imp/l (corresponds to 833,3 Hz at 100 l/min) minimum value range: 5000 Imp/l (corresponds to 500 Hz at 6 l/min) (other frequencies available on request)
Pulse output:	transistor output "Push-Pull" I_{out} = 100 mA max. pulse width 50 ms pulse per volume is to be stated
Switching output:	transistor output "Push-Pull" (resistant to short circuits and polarity reversal) I_{out} = 100 mA max. hysteresis: 2 % of meas. span

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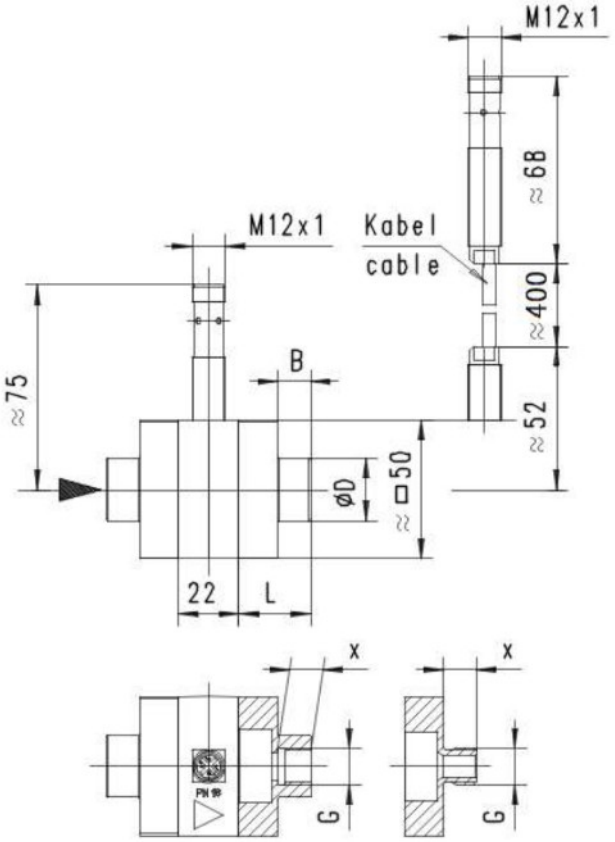
Order Code Connection Size / Measuring Range:

	Connection size				
Measuring range	DN 8	DN 10	DN 15	DN 20	DN 25
A: 0,4...6,0 l/min	**08A**	**10A**	**15A**	**20A**	**25A**
B: 1,0...15 l/min	**08B**	**10B**	**15B**	**20B**	**25B**
C: 1,0...25 l/min	**/**	**10C**	**15C**	**20C**	**25C**
D: 1,0...50 l/min	**/**	**/**	**15D**	**20D**	**25D**
E: 1,0...80 l/min	**/**	**/**	**/**	**20E**	**25E**
F: 1,0...100 l/min	**/**	**/**	**/**	**/**	**25F**

Dimensions and Q_{max} Values:



G	DN	L [mm]	B [mm]	X [mm]	ØD Metal	ØD Plastic
G 1/4	DN 08	26	12	12	22,5	33
G 3/8	DN 10	26	12	12	22,5	33
G 1/2	DN 15	28	14	14	28,0	37
G 3/4	DN 20	30	15	16	35,0	42
G 1	DN 25	30	-	18	-	-

Connection pieces:

G	Q_{max} [l/ min]	Weight [kg] Metal	Weight [kg] Plastic
G 1/4	20	0,245	0,055
G 3/8	40	0,240	0,050
G 1/2	80	0,250	0,055
G 3/4	100	0,270	0,060
G 1	100	0,400	0,085

Body, sensor, internal parts:	0,400	0,100

Order Code:

Order number: **DK04. 10. A. 1. 0. 0. 0**

Flap flowmeter and switch for low viscosity media

Process connection*:
08 = DN 8, G 1/4
10 = DN 10, G 3/8
15 = DN 15, G 1/2
20 = DN 20, G 3/4
25 = DN 25, G 1 *see table on the left

Measuring ranges*:
A = 0,4–6,0 l/min (with PPS-housing only)
B = 1–15 l/min
C = 1–25 l/min (not for process connection 08)
D = 1–50 l/min (not for process connection 08, 10)
E = 1–80 l/min (only for process connection. 20, 25)
F = 1-100 l/min (only for process connection. 25)
Measuring ranges can be changed downwards at the factory

Output:
1 = analogue output 0…10 V
2 = analogue output 4….20 mA
3 = frequency output **(please indicate f_{max})**
4 = programmable switching output, maximum switch (Push Pull, PNP and NPN) **(please indicate switch point)**
4M= programmable switching output, minimum switch (Push Pull, PNP and NPN) **(please indicate switch point)**
5 = counting pulse

Electrical connection:
0 = plug (M12x1) 4- wire. without mating connector

Housing version:
0 = housing PPS, connection brass, standard
1 = housing PPS, connection POM
2 = housing PPS, connection stainless steel
3 = housing + connection brass (P_{max} = 100 bar)
4 = housing + connection st. steel (P_{max} = 100 bar)
5 = housing + connection brass (P_{max} = 100 bar, high temperature version up to 110 °C)
6 = housing + connection st. steel (P_{max} = 100 bar, high temperature version up to 110 °C)

Options:
0 = without
1 = please specify in plain text

For devices with switching output:
S = Switching delay period, 0,0...99,9 s (from normal to alarm)
R = Switch-back delay period, 0,0...99,9 s (from alarm to normal)
P = Power-on-delay period, 0...99 s (after connecting the supply, time during which the switching output is not activated)
Hxx = Switching hysteresis [% of metering range] (standard: 2 %)

Accessory:

M12 plug connector with PVC-cable
SM12.4 (4-wire)

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