Operating Instructions

for

Low Volume Rotating Vane

Flow Meter

Model: DTK

1. Contents

Manufactured and sold by:

Kobold Messring GmbH
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2. Note

Please read these operating instructions before unpacking and putting the unit into operation. Follow the instructions precisely as described herein.
The devices are only to be used, maintained and serviced by persons familiar with these operating instructions and in accordance with local regulations applying to Health & Safety and prevention of accidents.

When used in machines, the measuring unit should be used only when the machines fulfil the EWG-machine guidelines.

as per PED 97/23/EG
In acc. with Article 3 Paragraph (3), "Sound Engineering Practice", of the PED 97/23/EC no CE mark.
Diagram 8, Pipe, Group 1 dangerous fluids

3. Instrument Inspection

Instruments are inspected before shipping and sent out in perfect condition.
Should damage to a device be visible, we recommend a thorough inspection of the delivery packaging. In case of damage, please inform your parcel service / forwarding agent immediately, since they are responsible for damages during transit.

Scope of delivery:
The standard delivery includes:
- Low Volume Rotating Vane Flow Meter model: DTK
- Operating Instructions

4. Regulation Use

Any use of the DTK flow sensor, which exceeds the manufacturers specification may invalidate its warranty. Therefore, any resulting damage is not the responsibility of the manufacturer. The user assumes all risk for such usage.

5. Operating Principle

The medium flows through a specially shaped flow housing and causes a vane to rotate. The vane has imbedded permanent magnets which are detected by a Hall Effect sensor as they pass. The Hall Effect sensor generates a voltage pulse each time a magnet passes. The frequency of the pulses is directly proportional to the flow velocity.

6. Mechanical Connection

Before installation:

- Remove all transport packaging and ascertain that no packaging material is left in the instrument
- Please ascertain whether the allowable maximum operating pressure and operating temperature of the instruments will not be exceeded (see standard material combinations).
- Please ascertain after completing of mechanical installation, whether the connection between fitting and pipe is tight.

Warning! Overflows of more than 20 % might damage the bearings and cause larger measuring errors or malfunction.

7. Electrical Connection

7.1 General

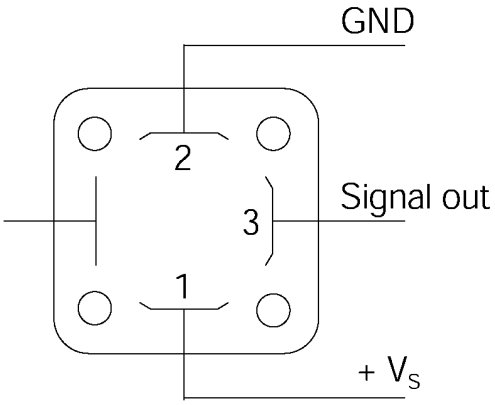
- Make sure that the power supply wires are de-energized.
- Connect the power supply and output signal wires according to the wiring diagrams under 7.2.

Caution! Incorrect connection will destroy the electronics.

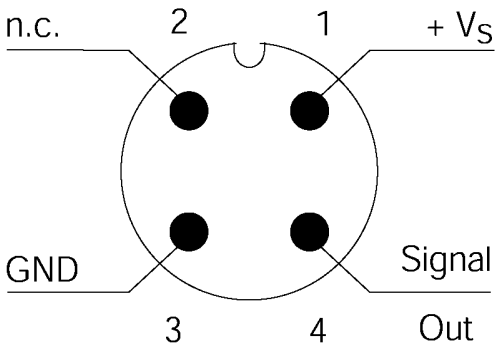
Make sure that the power supply values of your system are matching the power supply values of this instrument.

7.2 Plug Connection

DTK-...0400 NPN Open Collector



DTK-...F3XX;DTK-...L3XX,PNP Open Collector



Mating plug color codes:
1= brown, 3 = blue, 4 = black

7.3 Cable Connection

DTK-...0P00; DTK-...0S00

white:	+ V_S
brown:	GND
green:	signal NPN Open Collector

8. Technical Information

Measuring accuracy:	± 2% f. s.
Linearity:	± 1% v. ME
Repeatability:	± 0.25%
Medium temperature:	-15°C to +80°C
	-15°C to +140°C (DTK-...0S00)
Ambient temperatue:	-15°C to +60°C
Max. pressure:	30 bar

Materials

Housing:	Stainless steel 1.3955
Orifice:	Stainless steel 1.4404
Axle:	Stainless steel 1.4404
Rotating vane:	PVDF
Gasket:	FPM (Viton)
Connection:	G ¼ female thread
	¼ NPT female thread
Installation position:	horizontal
Protection type:	IP 65

Electrical Data

OEM frequency output (DTK-...0*00)

Power supply:	4 – 24 V_{DC}
Current input:	typ. 5 mA
Pulse output:	NPN, max. 20 mA, open collector
Electrical connection:	1,5 m PVC cable
	1,5 m silicone cable
	plug connector 43650

AUF-4000 (option for DIN plug connector connection)

Display:	4-segment red LED
Temperature range:	-20 to +80°C
Power supply:	24 V_{DC} ± 20%
Input:	Pulses of DTK (Hall effect sensor)
Output:	4 – 20 mA, 3-wire
Load:	250 Ω

DTK-...F300

Power supply:	24 V_{DC} ± 20%
Current input:	10 mA
Pulse output:	PNP, open collector, max. 20 mA
Electrical connection:	plug connector M12x1

DTK-...F3*0

Power supply:	24 V_{DC} ± 20%
Current input:	15 mA
Pulse output:	PNP; open collector, max. 20 mA
Factor:	0.25 to 2 factory setting
Electrical connection:	plug connector M12x1

DTK-...L303; DTK-...L343

Power supply:	24 V_{DC} ± 20%
Output:	0(4) – 20 mA, 3-wire
Max. load:	500 Ω
Electrical connection:	plug connector M12x1

9. Order Codes

Meas. range [L/min]	Orifice Ø [mm]	Frequency at ME	Pressure loss at ME	Model	Connection	Evaluating electronics
0.05-0.6	1.0	21 Hz	1.0 bar	**DTK-1210..**		**OEM frequency output** **..0P00** = NPN, 1.5 m PVC cable **..0S00** = NPN, 1.5 m silicone cable **..0400** = NPN, plug connector DIN 43650 **Frequency output** **..F300** = plug connector M12x1, PNP **..F320** = plug con. M12x1, PNP, divider 1:2 **..F340** = plug con. M12x1, PNP, divider 1:4 **..F390** = plug con. M12x1, PNP, divider adjustable **Analogue output** **..L303** = plug con. M12x1, 0-20 mA, 3-wire **..L343** = plug con. M12x1, 4-20 mA, 3-wire
0.1-1.3	1.5	30 Hz	1.0 bar	**DTK-1215..**		
0.2-2.0	1.8	36 Hz	1.1 bar	**DTK-1218..**		
0.3-3.5	2.5	41 Hz	0.9 bar	**DTK-1225..**	**..G2..** = G 1/4	
0.3-5.0	3.0	47 Hz	0.9 bar	**DTK-1230..**	**..N2..** = 1/4 NPT	
0.5-7.0	3.5	51 Hz	1.0 bar	**DTK-1235..**		
0.5-10.0	5.0	56 Hz	1.0 bar	**DTK-1250..**		
1.0-12.0	6.0	44 Hz	0.9 bar	**DTK-1260..**		

Plug-on display
for model DTK-...0400 (with DIN plug connector)

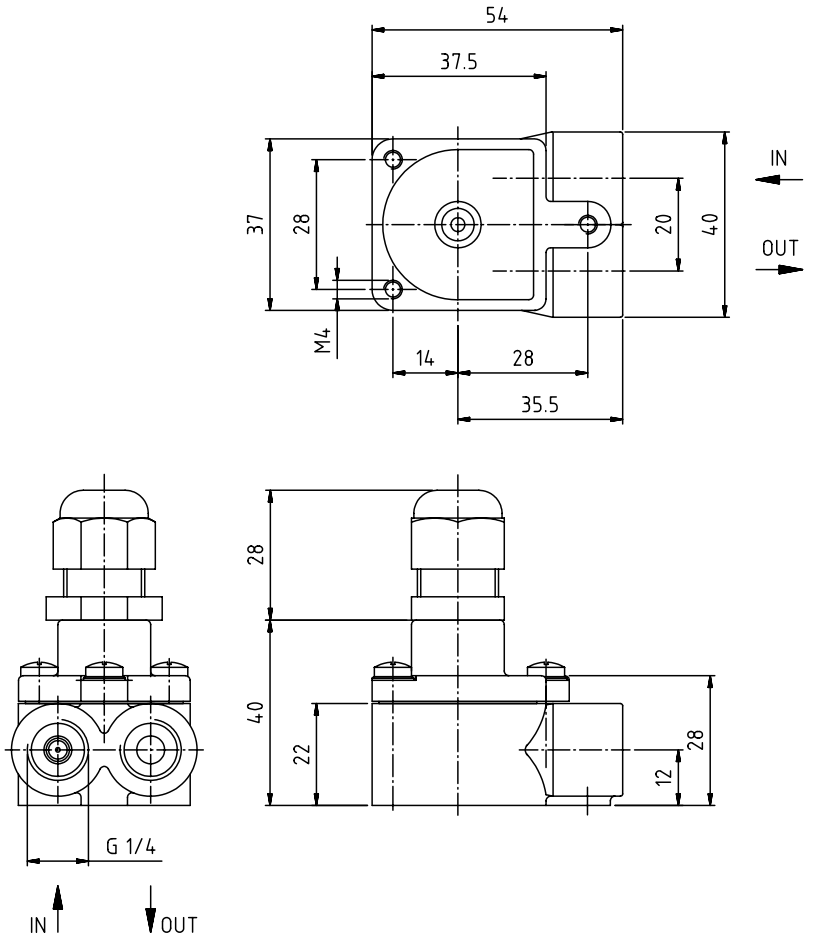
Description	Order number
4-segment red LED display Input: pulses of DTK (Hall effect sensor), Power supply: 24 V_{DC} Output: 4-20 mA (max. 250 Ω) Plug connector DIN 43650	**AUF-4000**

Accessory
Round connector

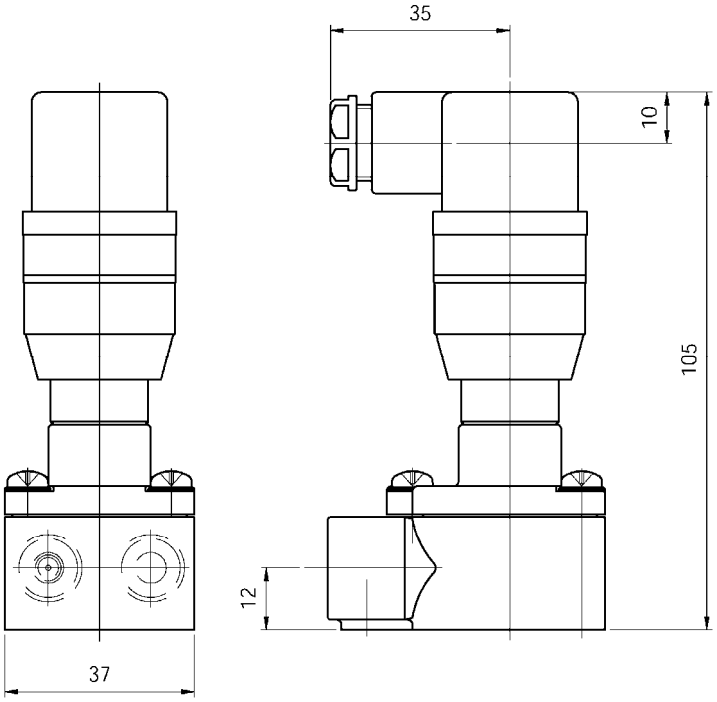
Typ	Description
ZUB-KAB-12D500	Round connector M12 x 1 Dose with terminal, 5-pol
ZUB-KAB-12K002	Round connector M12 x 1 Dose with 2 m cable, 4-pol
ZUB-KAB-12Q000	Round connector M12 x 1 Dose with Quick-on, 4-pol

10. Dimensions

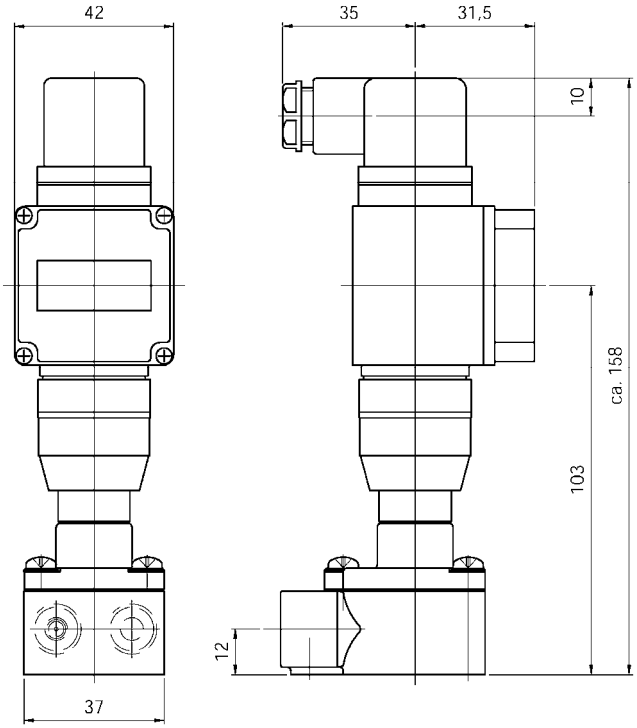
DTK-...0P00; DTK-...0S00



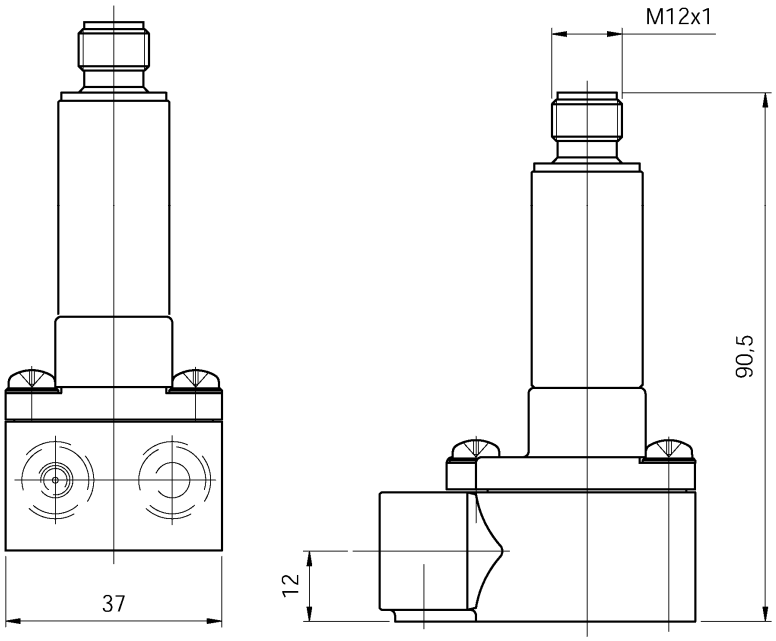
DTK-...0400



DTK-...0400 with AUF-4000



DTK-...F3..; DTK-...L3...



11. Declaration of Conformance

We, KOBOLD Messring GmbH, Hofheim-Ts, Germany, declare under our sole responsibility that the product:

Low Volume Rotating Vane Flow Meter **Model: DTK-...**

to which this declaration relates is in conformity with the standards noted below:

EN 50081-2 **1994-03**

EN 50082-2 **1996-02**

DIN EN 61010-1 **1994-03**

EN 60529, DIN VDE 0470-1 **1992-11**

Also the following EWG guidelines are fulfilled:

73/23 EWG Low voltage directive
89/336/EWG Electromagnetic compatibility

97/23/EG PED
Category I, Table 8, pipe, Group 1 dangerous fluids
Module D, mark CE0098
notified body: Germanischer Lloyd Germany

Hofheim, 09. Jul. 2004

H. Peters M. Wenzel