Operating Instructions

for

Electronic
Low-Volume Flow Meter

Model: KFF; KFG

Typ: KFF-3...

Typ: KFF-1...

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Manufactured and sold by:

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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 instruction manuals on our website www.kobold.com are always for currently manufactured version of our products. Due to technical changes, the instruction manuals available online may not always correspond to the product version you have purchased. If you need an instruction manual that corresponds to the purchased product version, you can request it from us free of charge by email (info.de@kobold.com) in PDF format, specifying the relevant invoice number and serial number. If you wish, the operating instructions can also be sent to you by post in paper form against an applicable postage fee.

Operating instructions, data sheet, approvals and further information via the QR code on the device or via www.kobold.com

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 EC-machine guidelines.

as per PED 2014/68/EU
In acc. with Article 4 Paragraph (3), "Sound Engineering Practice", of the PED 2014/68/EU no CE mark.

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:
- Flow Meter model: KFF; KFG
- Connection cable

4. Regulation Use

The units of series KFF and KFG are used for measuring liquid or gas flows

These units are configured as follows:

Analogue output
In order to transmit the measured flow results, an analogue output (0-5 V) is made available.

Integrated or separate LCD digital display (3-digit)
Series KFF may only be used for measurement of low-viscous fluids (<10 mm²/s). Measurement of liquids with higher viscosity can result in significant measurement errors.

Series KFG are calibrated at standard conditions in air (1.013 bar abs., 20 °C).

Only KFG-1:

Non-conventional media, pressures or temperatures may warrant unit-calibration on site, by means of a comparison unit.

Attention! The media to be measured may not be contaminated. In particular, large fibre particles can cause jamming or even destruction of rotor.

5. Operating Principle

KOBOLD KFF/KFG Flow Meters are used for sensing small, to extremely small, volumetric flow rates of gases (KFG) and liquids (KFF). The media must be transmissive for infrared light.
Series KFF/KFG 1000/3000 flow meters are available in Ryton® and brass, and therefore, suitable for many applications in industry, in laboratories, and so forth. The frequency output is optional.

Series KFF/KFG 3000 Flow Meters are available in Ryton® and in brass.

The Flow Meter is based on the Pelton Principle, that is, the flowing medium causes a vane to rotate. The rotary motion is converted to electrical impulses by means of photodiodes. The flow rate is output as a frequency signal or a linear analogue (0-5 V_{DC}).

6. Mechanical Connection

Before installation

- Please ensure that the actual flow-volume is in agreement with the measuring range of the device. The reference number of measuring range can be read from the type-label sticker.

Attention: Continuous violation of measuring range can cause damage to bearings.

- Make sure that the max. operational pressure and temperature are not exceeded.
- Ensure that there is no remaining packing material inside the unit.

Only KFG:
The calibration of the unit is performed in horizontal position; type-label faces upwards. With other mounting positions, a measured-value deviation of 0.25 %/°C at 50% nominal flow should be taken into consideration.

Only KFF-1, KFG-1:

- Mount the measuring device on desired position. Two mounting flanges are supplied for this purpose.
- Connect the unit with your piping system.

Attention: During joining it is obligatory to work with two suitable wrenches. A transfer of torque onto the device's housing while tightening joints can result in destruction of measuring device.

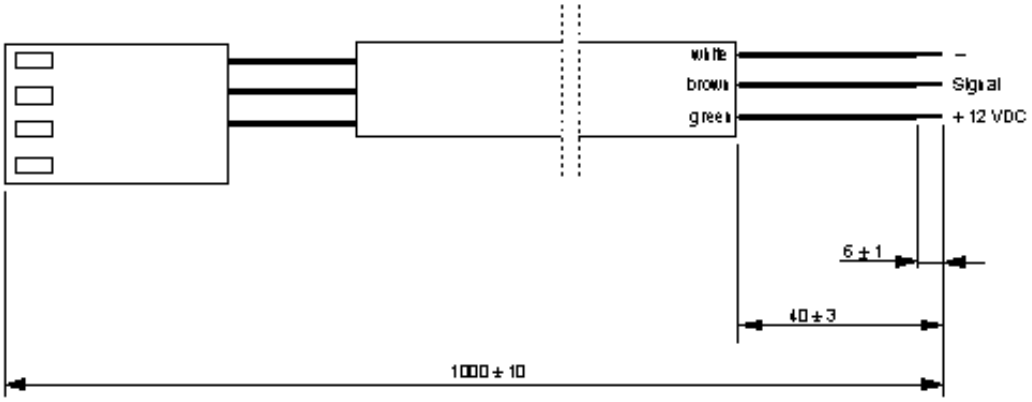
- Check the sealing of screw-joints.

7. Electrical Connection

Attention! Make sure that the voltage values of your system correspond with the voltage values of the measuring unit (+12.5 V_{DC} ± 2 V_{DC})

- Make sure that the supply wires are de-energized.
- Connect the ends of supplied connection cable with your system according to wiring diagram, shown below.

Plug connection for standard cable



Plug connection for special cable

black: GND
white: Signal
red: +12 V_{DC}

Attention! Incorrect wiring will lead to damage of the unit's electronics.

- Connect the cable-plug with the corresponding socket to the measuring device. Plug and socket are coded, so that a wrong connection is not possible.

8. Electrical Commissioning

The unit is supplied ready for operation. The electronic is adjusted and harmonised to the sensor. By shifting the potentiometer - located on the side of the electronics - the analogue output 0-5 V can be fine adjusted by using a reference meter.

9. Mechanical Commissioning

Attention: Large air-bubbles in the measurement chamber can cause error indications and may destroy the bearings.

To avoid pressure peaks, flow medium should enter the unit slowly.

Attention: Pressure peaks generated by flow hammer, caused by magnetic valves, ball valves or similar devices, can lead to destruction of unit (water hammer!). During operation it must be ensured that the sensor is completely filled with flow media.

10. Technical Information

Operating instructions, data sheet, approvals and further information via the QR code on the device or via www.kobold.com

11. Order Codes

Operating instructions, data sheet, approvals and further information via the QR code on the device or via www.kobold.com

12. Dimensions

Operating instructions, data sheet, approvals and further information via the QR code on the device or via www.kobold.com

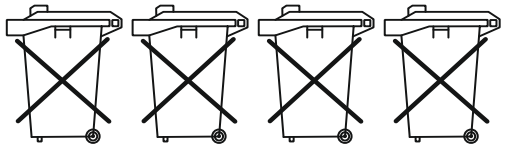
13. Disposal

Note!

- Avoid environmental damage caused by media-contaminated parts
- Dispose of the device and packaging in an environmentally friendly manner
- Comply with applicable national and international disposal regulations and environmental regulations.

Batteries

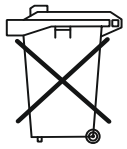
Batteries containing pollutants are marked with a sign consisting of a crossed-out garbage can and the chemical symbol (Cd, Hg, Li or Pb) of the heavy metal that is decisive for the classification as containing pollutants:



Cd[1] Hg[2] Pb[3] Li[4]

1. „Cd" stands for cadmium
2. „Hg" stands for mercury
3. „Pb" stands for lead
4. „Li" stands for lithium

Electrical and electronic equipment



14. EC Declaration of Conformance

We, KOBOLD Messring GmbH, Nordring 22-24, 65719 Hofheim, Germany, declare under our sole responsibility that the product:

Electronic Low-Volume Flow Meter **Model: KFF; KFG**

to which this declaration relates is in conformity with the following EU directives stated below:

2014/30/EU	**EMC Directive**
2011/65/EU	**RoHS** (category 9)
2015/863/EU	Delegated Directive (RoHS III)

Also, the following standards are fulfilled:

EN 61000-4-2:2008
Electromagnetic compatibility (EMC) - Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test

EN 61000-4-3:2006+A2:2010
Electromagnetic compatibility (EMC) - Part 4-3: Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test

Hofheim, 26 Sept. 2023

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