Operating Instruction

for

Flowmonitor

Model: DF-WM

1. Contents

Manufactured and sold by:

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2. Note

2.1. General

Before unpacking and commissioning the device, the operating instructions and the “General Safety Instructions” document must be read and followed carefully. The general safety instructions, the operating instructions, the data sheet as well as approvals and further information can be downloaded via the QR code on the device or under the respective product on www.kobold.com.

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 device should be used only when the entire machine fulfils the EU machinery directive.

2.2. Validity and version of the operating instructions

Due to technical changes, the device documentation 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.

2.3. Hazard warnings

The following instructions are intended to ensure your personal safety and to prevent damage to the product described or connected devices. Safety instructions and warnings to prevent danger to the life and health of users or maintenance personnel, or to prevent damage to property, are highlighted in this documentation using the symbols defined here. *The symbols and terms used have the following meaning in the documentation itself:*

Symbol	Explanation	Symbol	Explanation
 Note	Is important information about the product, the handling of the product or the respective part of the documentation to which particular attention should be drawn.	 Caution	Means that minor personal injury or minor property damage may occur if proper precautions are not taken.

Symbol	Explanation	Symbol	Explanation
 Warning	Indicates that serious personal injury or substantial property damage may occur if proper precautions are not taken.	 Danger	Means that death can occur if proper precautions are not taken.
 Warning	Attention: Hot surface!	 Warning	Warning: Dangerous electrical voltage

2.4. 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.

	Pipe	
	Table 8 Group 1 dangerous fluids	Table 9 Group 2 no dangerous fluids
All DF-models except DF-xxG(H)R32 DF-xxG(H)R40	Art. 4, § 3	Art. 4, § 3
DF-xxGR32../DF-xxGR40	not deliverable	Art. 4, § 3
DF-xxHR32../DF-xxHR40..	Kat. II	Art. 4, § 3

3. Instrument Inspection

The instruments are inspected before shipping and sent out in perfect condition. Should damage to the instrument be visible, we recommend close inspection of the delivery package. In cases of damage, please immediately inform the forwarder as he is liable for any damage in transit.

Scope of delivery:

- All parts belong to the standard scope of supply are attached to the instrument.
- For instruments with socket connection the mating plug is also supplied.

4. Regulation Use

The model DF-WM is intended to monitor and measure discrete flow of liquids.

The instrument provides the following facilities:

Discrete flow measurement

By means of a button and a setpoint selector the actual flowrate can be called up (see flow throughput measuring).

Limit value relays

The instrument is provided with limit value relays for monitoring flow throughput.

It is suitable for low viscosity fluids providing they have no effects on the instrument's materials. If using higher viscosity media, large deviations will occur from the flow range as given in the catalogue. Long threads can lead to the seizure of the rotor.

Likewise, ferritic particles can build up on the rotating vane and lead to faulty operation or destruction of the rotor. In cases of doubt, please contact the supplier.

Material Combinations

Standard version					**High-pressure version**	
Material combination	I	II	III	IV[1)]	VI[1)]	VII[1)]
Order code	**..A..**	**..B..**	**..D..**	**..E..**	**..G..**	**..H..**
Connection types	Pipe thread	Pipe thread	Pipe thread	Pipe thread flange	Pipe thread	Pipe thread flange
Case	Trogamide	Polysulfone	Brass nickel-plated	St.steel[4)]	Brass nickel-plated	St.steel[4)]
Cover	Trogamide	Polysulfone	Polysulfone	Polysulfone	Brass nickel-plated	St.steel[4)]
Connection	Brass nickel-plated	St.steel[4)]	Brass nickel-plated	St.steel[4)]	Brass nickel-plated	St.steel[4)]
Locking pins	Brass	Brass	Brass	-	-	-
O-rings	NBR	FPM	NBR	FPM	NBR	FPM
Vane	POM	PTFE	POM	PTFE	POM	PTFE
Axle[3)]	St.steel[4)]	St.steel[4)]	St.steel[4)]	St.steel[4)]	St.steel[4)])	St.steel[4)]
Bearing[3)]	PTFE	PTFE	PTFE	PTFE	PTFE	PTFE
Screen	PTFE[2)]	PTFE[2)]	PTFE[2)]	PTFE[2)]	PTFE[2)]	PTFE[2)]
Max. operating pressure	10 bar	10 bar	16 bar	16 bar	100 bar	100 bar flange PN 40
Max. operating temperature	60 °C	80 °C	80 °C	80 °C	80 °C	80 °C

1) Connection cannot be rotated 2) Stainless St. for model DF 0.5 3) Special version upon request 4) Stainless St.1.4571, 1.4404

5. Operating Principle

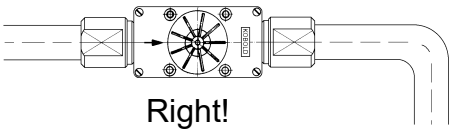
A plastic rotating vane rotates on an axle when a flow throughput occurs. A ring-shaped magnet hermetically sealed in the rotating vane transmits this rotary motion to a Hall sensor mounted outside on the instrument housing. The electronics mounted on the housing converts the frequency signal and activates a limit switch.

6. Mechanical Connection

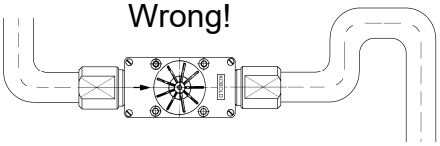
Before installation
Please be sure the actual flow throughput matches the flow range of the instrument. The flow range may be obtained from the label.

Caution	Warning! If the measuring range is exceeded by more than 20%, bearing damage may occur.

- Please be certain the maximum operating pressure and operating temperature of the instruments will not be exceeded.
- Make sure that the electrical supply to the instrument conforms with the equipment operating data.
- Remove all transport packing and ascertain that no packing material is left in the instrument.
- The instrument may be installed in any position. However, the flow must always take place in the direction of the arrow, while the front face of the instrument must always be in the vertical plane.


Right!

Wrong!



- It must be ensured that the instrument housing is continuously filled with the flow medium, especially for flows from top to bottom. No straight pipe lengths are necessary at inlet and outlet connections.
- Sealing of the connection threads should be carried out with PTFE tape or similar.
- During installation of the instrument, it must be checked that no stress is applied to the connections. We recommend that the inlet and outlet pipes are mechanically fixed approximately 50 mm from each instrument connection.
- When using Material Combination IIB, IV, V, VI and VII the instrument connections may not be rotated.
- Check that the connection thread to pipe is fully sealed.

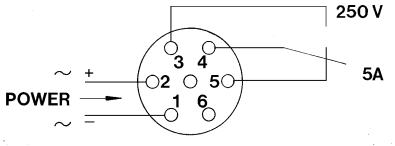
Caution	Warning! The threaded connections of the instrument must be tightened with a suitable sized open-ended spanner. Otherwise, the housing may be stressed which could lead to breakage of the equipment.

Caution	Warning! The material polysulfone (order code B) tends to cause stress cracks if unsuitable cleaning or sealing agents are used. Only agents suitable for polysulfone may be used during assembly or cleaning.

7. Electrical Connection

Caution	Warning! Make sure that the supply voltage to your instrument conforms with the value given on the equipment label.

- Ensure that the power is disconnected during connection of the cable.
- For equipment with plug connection solder the ends of your supply cables in accordance with the connection plan supplied with the coupling plug.
- For equipment with cable connection simply connect the instrument cable to your supply cable. Supply cable cross-section: 0.75 mm².

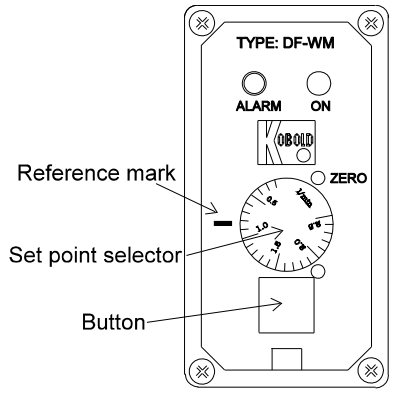


Cable connection:
No.1 : Power supply (-)
No.2 : Power supply (+)
No.3:
No.4:
No.5:

Caution	Warning! Incorrect wiring of the connection in the coupling plug or incorrect wiring of the connection cable can lead to the electronics being destroyed.

- Plug the coupling plug in the socket provided on the equipment (in the case of instruments with plug connections).
- After connection of your external equipment at the connection points the instrument is ready for operation.

8. Commissioning



The instrument is delivered ready to operate. The electronics are matched and calibrated with the signal transmitter. The calibration screws ('ZERO' and 'RANGE') next to the rotating scale adjustment knob must not be adjusted by the customer. If they are adjusted, a re-calibration will be required involving new calculations. Should the electronics be opened, any warranty will become invalid.
As soon as the external power supply to the instrument is switched on, a green LED will indicate that the unit is ready for operation. The red 'ALARM' light diode will flash.

NOTE Note	Warning! A red, flashing LED indicates that the limit value relay is in alarm condition (see connection diagram).

Limit value
The model DF-WM instrument has a limit value relay for monitoring the flow throughput. The switch condition of the relay is indicated by the flashing, red LED. The contact is designed as a minimum contact; i. e. for flow less than the selected flow value the limit value relay will indicate an alarm condition (flashing, red LED).

NOTE Note	Warning! The limit value relay will indicate an alarm condition if the supply cable is broken or if power supply is interrupted.

Adjustment of limit value
Loosen the four screws on the front plate of the electronics and remove the transparent cover.
The limit value may be adjusted by means of the set point selector.
The required limit value may be set by turning the set point selector so that the value aligns with the reference mark to the left of the scale on the front plate of the electronics.

Call-up of actual flowrate

To measure the actual flowrate the red button must be depressed. The limit value relay is then bridged and made inoperative. By rotating the set point selector (while holding the button) from the lowest to the highest value (until the red light flashes) the flow rate may be determined from the scale or the set point selector. After reading off the flow rate the set point selector may be repositioned to the desired limit value and the red button released.

 Note	Warning! After adjustment of the switch or call up of the flow throughput the front plate must be screwed down tight onto the electronics housing. Ensure correct positioning of the gasket.

9. Commissioning of the Instrument

To avoid pressure surges, the flow medium should be slowly introduced into the instrument.

 Caution	Warning! Pressure surges from solenoid valves, ball valves or similar may lead to breakage of the instrument (water hammer). In the operating condi¬tion it must be checked that the instrument housing is continuously filled with the flow medium. Warning! Large air bubbles in the instrument housing can lead to measuring errors or destruction of the bearings.

10. Maintenance

For measured media without contamination, the DF-WM instrument is almost maintenance-free. As the rotating vane contains magnets, any ferritic particles present in the medium may lead to problems. In order to avoid such problems, we recommend the installation of a magnet filter e.g.: model MF-R.
Should cleaning of the instrument become necessary, the housing cover may easily be removed to provide access to the internals. After cleaning, the instrument may easily be reassembled. Any work on the electronics may only be undertaken by the supplier, otherwise the warranty will become invalid.

11. Technical Information

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

12. Order Codes

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

13. Dimensions

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

14. Recommended Spare Parts

1.1) Rotating vane PTFE
1.2) Rotating vane POM
1.3) Rotating vane PTFE with saphire bearings
2.1) Stainless Steel axle / PTFE bearings
2.2) Ceramic axle/ PTFE bearings
2.3) Saphire axle with saphire bearings (only for rotating vane 1.3)
3.1) Cover for instrument housing, Trogamide, including seal
3.2) Cover for instrument housing, Polysulphone, including seal
4.1) Transparent cover for electronics housing
5.1) Set of NBR 0-rings
5.2) Set of FPM 0-rings

For spare part ordering we need the serial no. of the instrument.

15. Disposal

See “General Safety Instructions” - via the QR code on the device or via www.kobold.com

16. EU Declaration of Conformance

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

Flowmonitor Model: DF-WM

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)

Additionally for **DF-xxHR32../DF-xxHR40../DF-xxHF50..:**

2014/68/EU **PED**

- Category II, piping, Diagram 8, group 1 dangerous fluids
- Module A2

Additionally for Option 0+1:

2014/35/EU **Low Voltage Directive**

Also, the following standards are fulfilled:

EN 61000-4-4:2012 Electromagnetic compatibility (EMC) - Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test, Burst 2 kV

EN 61000-4-6:2014 Electromagnetic compatibility (EMC) - Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radio-frequency fields, HF coupling 10 V

EN 61000-4-3:2011 Electromagnetic compatibility (EMC) - Part 4-3: Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test, HF irradiation 10 V/m

EN 61000-4-5:2019 Electromagnetic compatibility (EMC) - Part 4-5: Testing and measurement techniques - Surge immunity test, SURGE 1 kV line to line / 2 kV line to ground

EN IEC 63000:2018 Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

Additionally for **DF-xxHR32../DF-xxHR40../DF-xxHF50..:**

AD 2000 Pamphlets

Hofheim, 06 March 2026

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