

DK32 - DK34

Variable area flowmeters



Installation, assembly, start-up and maintenance may only be performed by appropriately trained personnel. Check the nameplate for correct operating conditions.



For use in hazardous areas, special codes and regulations are applicable. Instruments must not be connected to power supply before reading instructions described in the supplementary manual.



This instrument complies with the requirements of the Pressure Equipment Directive. Please refer to the nameplate for operating condition limits. Instruments must not be pressurised before reading instructions described in the manual.



The responsibility as to the suitability, intended use and corrosion resistance of the used materials against the measured fluid of this device rests solely with the operator.

1 Installation



Specific conditions of use to be observed:

- The Variable Area Flowmeters with coated parts shall be installed and maintained such that the risk of electrostatic discharge is minimized.
- For thermal data and electrical data refer to the limits in the appropriate supplementary manual.
- The Variable Area Flowmeters type DK3. /ESK/ .. / .. / .. – Ex (for Ex nA and Ex ec only);
 - shall only be used in an area of not more than pollution degree 2, as defined in IEC 60664-1.
 - shall be provided with a transient protection that is set at a level not exceeding 140 % of the peak rated voltage value at the supply terminals to the equipment.
- The Variable Area Flowmeters type DK3. / K. / .. / .. / .. – Ex (for Ex nA and Ex ec only);
 - shall be prevented from solid foreign bodies falling vertically through openings into the enclosure.
 - shall be installed and connected in a cabinet in such a way that the cable assembly or connection plug are protected from mechanical force.
- Pressure surges in the process line shall be avoided.

Observe the type of protection (refer to nameplate) to apply the correct supplementary manual!

Prior to installation:

- Blow or flush out the pipes or tubes leading to the flowmeter.
- For gas flow applications, dry the pipes or tubes leading to the flowmeter.

Installation:

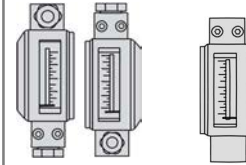
- Align the pipes or tubes leading to and from the flowmeter with the process connections to keep them free of stress.
- If necessary, support the pipes or tubes to prevent vibration being transmitted to the flowmeter.
- Install the flowmeters with inlet at the bottom and outlet at the top within 5° of the vertical.
- Follow accepted plumbing practices for threaded or flanged fittings and the intended use.
- The built-in needle control valve allows adjustment of the flow.

For accurate flow measurement, the application data should be consistent with the sizing data and calibration of the variable area flowmeter.

Device variants

DK3. mechanical flowmeters

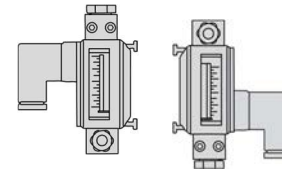
DK32 with top/bottom valve and rear process connection



DK34 without valve and vertical process connection

DK3./../S with limit switch and removable plug

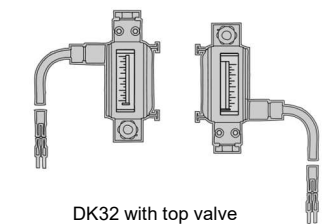
DK32 with bottom valve / DK34 without valve



DK32 with top valve

DK3./../L with limit switch and fixed cable (1.7 m / 5.6 ft)

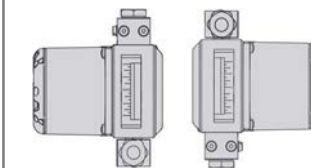
DK32 with bottom valve / DK34 without valve



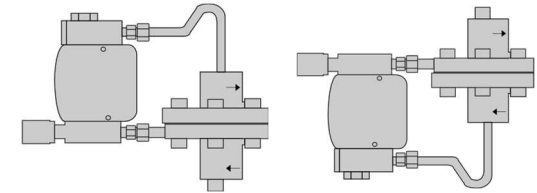
DK32 with top valve

Flow direction: bottom to top for all variants

DK32 with 4...20 mA/HART transmitter with bottom/top valve



Version with flow regulator

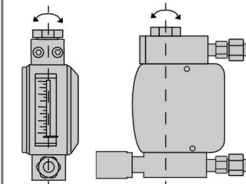


DK32 with flow regulator for variable inlet pressure

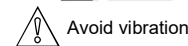
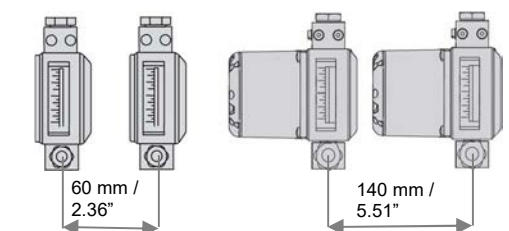
DK32 with flow regulator for variable outlet pressure

Installation conditions

+/- 5° from vertical



Keep minimum distances or apply vertical offset



2 Electrical connection

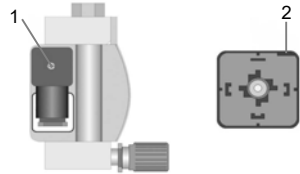


Danger:

All work on the electrical connections may only be carried out with the power disconnected.
Take note of the voltage data on the nameplate.
Observe the national regulations for electrical installations.

Electrical connection of limit switches

The electrical connection of the limit switches is made for
- DK3../S - in connection plug
- DK3../L - via a cable assembly

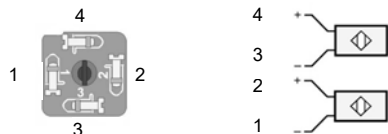


Procedure for DK3../S

- Loosen the screw (1) of the connector plug.
- Pull out the plug.
- Remove the screw (1) completely from the plug.
- Insert a screwdriver in the marked opening (2) (lift) and remove the terminal block.
- Lead the connection cable through the cable gland.
- Insert the cable (max. 1.5 mm²) and tighten it.

NAMUR switches K1/K2

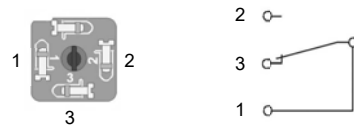
Power supply 8 VDC, measuring signal 1 / 3 mA



| ../S plug Terminal | Contact connections | ../L cable Strand colour |
|--------------------|---------------------|--------------------------|
| 1 | MIN minus | white |
| 2 | MIN plus | yellow |
| 3 | MAX minus | green |
| 4 | MAX plus | brown |

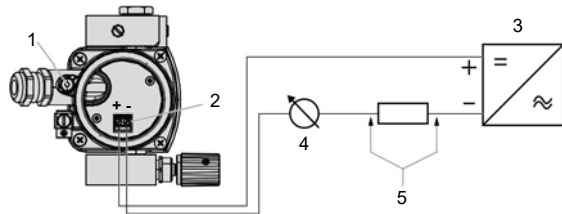
REED limit switch R1

Switching capacity max. 30 VDC, max. 100 mA



| ../S plug Terminal | Contact connections | ../L cable Strand colour |
|--------------------|---------------------|--------------------------|
| 1 | Common | red |
| 2 | Normally open | brown |
| 3 | Normally closed | blue |
| 4 | Unused | - |

Electrical signal output ESK3x



- 1 Lock screw in case of Ex d/XP device version
- 2 Terminal block
- 3 Power supply 12...32 VDC
- 4 Measuring signal 4...20 mA
- 5 External load, HART communication

Procedure

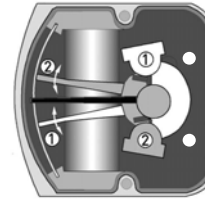
- Loosen the Ex d/XP lock screw (1) on the locking mechanism using an Allen key (WS3).
- Unscrew the cover.
- Connect the connecting cables to the device terminals in the terminal block (2) by ensuring the correct polarity.
- Screw on the cover.
- Tighten the Ex d/XP lock screw on the locking mechanism using an Allen key (WS3).



Danger:

For devices intended for use in hazardous areas with dust-resistant housing, the special conditions for sealing the electronic compartment and for the cable entry are available in the supplementary instructions.

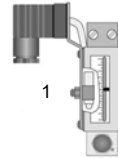
Settings of NAMUR limit switches K1/K2



Set the pointers to the desired limit values as a MIN contact (1) or MAX contact (2) along the scale.

If the pointer vane goes into the slot, an alarm is triggered. An alarm is also triggered in the event of a cable break or short circuit if a suitable amplifier is used.

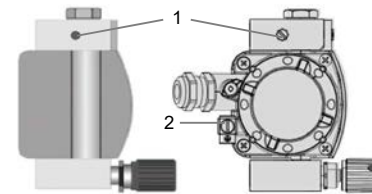
Settings of REED limit switch R1



- Loosen the nut (1).
- Set the REED cartridge to the desired value.
- Fix the nut (1).

The REED contact is actuated directly by the float magnet. The desired switching point can only be determined in measuring mode. A reference to the scale and/or pointer cannot be established.

Grounding connections



- 1 Fitting (M4 threaded hole) of measuring unit
- 2 Alternatively with ESK3x transmitter at the transmitter housing

Download documents and software

Scan the code on the nameplate or scan the following code and enter the serial number.



Contact

Select your country from the region / language selector to view your local KROHNE contact details on:

www.krohne.com