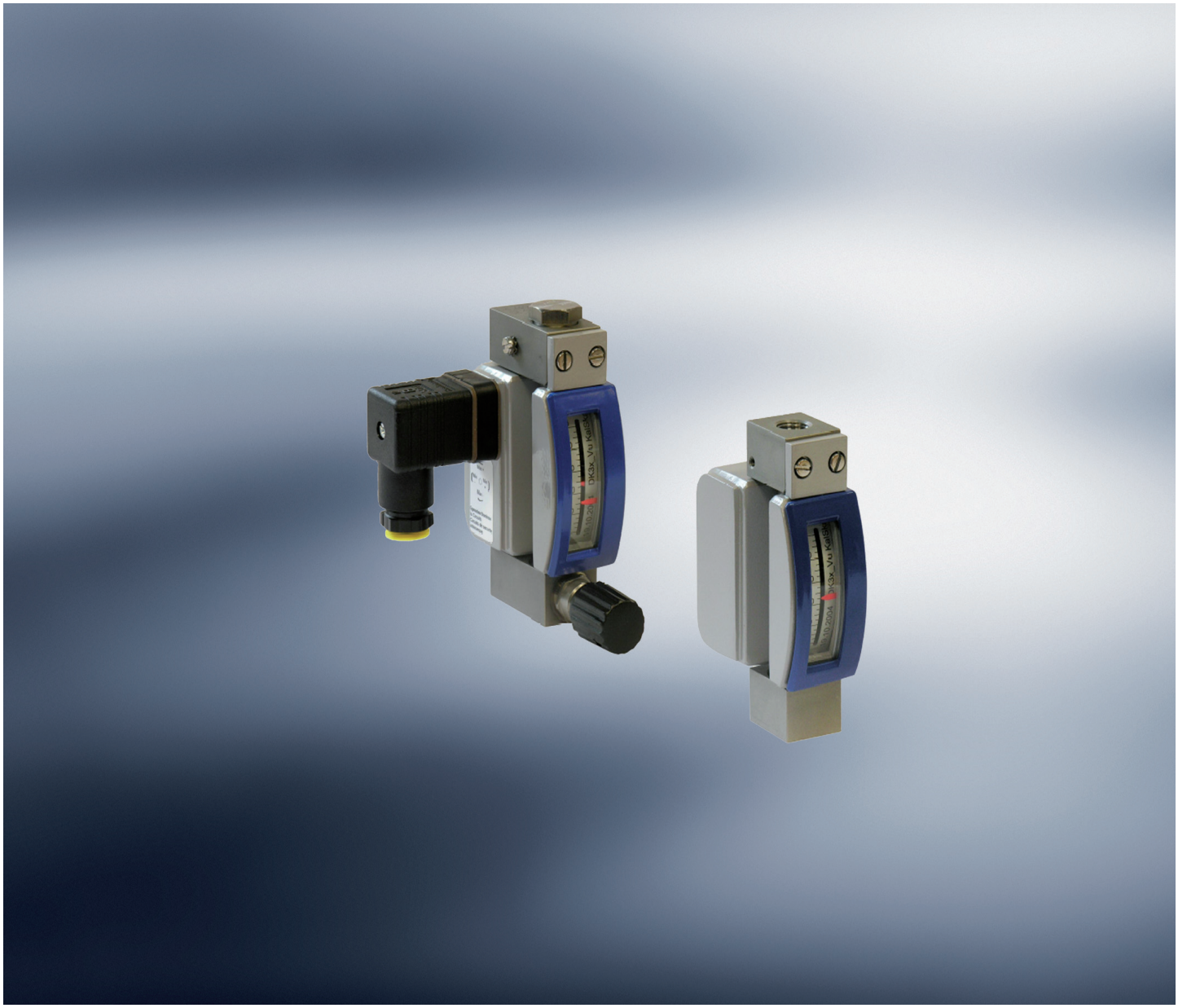


DK32 DK34 Handbook

All-metal miniature flowmeters
Category II2G with electrical built-ins

Supplement for Installation and Operating Instructions

Ex II2G

KROHNE

INFORMATION!
These supplementary Ex instructions apply for explosion-protected designs of the variable area flowmeters DK3./....././..../–Ex. They supplement the installation and operating instructions for non-explosion-protected designs.

The information in these instructions contains only the data concerning the explosion protection. The technical details in the installation and operating instructions for the non-explosion-protected designs apply unchanged in as far as they are not excluded or replaced by these instructions.

Variable area flowmeters of type DK3./....././..../. –Ex confirm to European Directive 94/9/EG (ATEX). One or more standards are stated in the EC Type Test Certificate

PTB 99 ATEX 2191

have already been replaced by later editions.

The manufacturer declares this type of instrument in compliance with the requirements of the latest edition since the changed requirements of the newer editions are not relevant for this type.

With introduction of the new standard edition EN 60079-0 the general marking has been changed from EEx to Ex.

If required the EC Type Test Certificate can be downloaded under www.krohne.com.

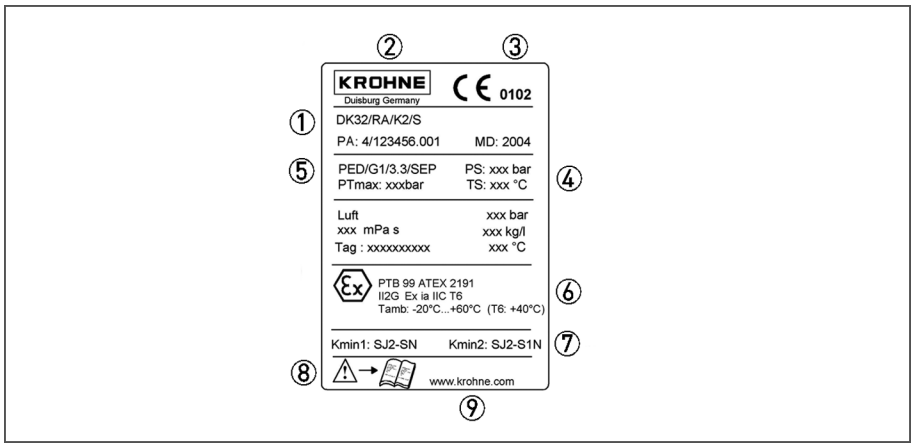
CAUTION!
Mounting, installation, (initial) start-up and maintenance work in connection with hazardous-duty equipment may only be carried out by personnel who have received training in explosion protection!

2.1 Description code

The applicable description code is that given in the standard Installation and Operating Instruction.

2.2 Marking

The type marking of the instrument is realized visibly with the rating plate shown below. The interior of the display has an additional marking with the serial number.



1. Type of meter
2. Manufacturer
3. Appointed ATEX & DGRL body
4. Design data: temperature & pressure rating
5. DGRL data
6. Ex-data
7. Built-in equipment
8. Pay regard to manual
9. KROHNE website

2.3 Category

The display parts and the measurement tubes of the variable area flowmeters were essentially designed in Category 2 for use in Zone 1.

2.4 Types of protection

The electric circuits of the limit switches and of the electronic signal output were designed in the "intrinsic safety" protection type of category "ia" or "ib".

2.5 Temperature classes

The variable area flowmeters DK3./....././..../.–Ex are approved for the medium temperatures depending on the instrument design, the temperature class and the ambient temperature. The temperature class classification depends on the types of the measuring unit and on the design of the display part. They apply irrespective of the selected flow measuring range. No difference is made between displays with one or two contacts.

DK3./....././....–Ex permissible medium and ambient temperatures

Temperature class	Maximum permissible ambient temperature [°C]	Maximum permissible medium temperature [°C]	
		Type DK32	Type DK34
T6	40	55	55
T5	40	80	85
	50	70	75
	60	65	65
T4	40	130	135
	50	120	130
	60	115	125
T3...T1	40	130	140
	50	120	130
	60	115	125

DK3./....././..../A–Ex permissible medium and ambient temperatures

Temperature class	Maximum permissible ambient temperature [°C]	Maximum permissible medium temperature [°C]	
		Type DK32	Type DK34
T6	40	75	80
	50	70	70
	60	60	60
T5	40	100	100
	50	95	100
	60	85	90
T4	40	135	135
	50	130	135
	60	120	130
T3...T1	40	135	150
	50	130	140
	60	120	130

Mounting and installation to be carried out in conformity with the valid installation standards for hazardous areas (e.g. EN 60079-14) by specialist personnel trained in explosion protection.

The information given in the standard Installation and Operating Instructions, the Supplementary Installation and Operating Instructions (Ex), and also in the EC Type Examination Certificate must be observed without fail.

Verify that the variable-area flowmeter is suitable for the range of application by checking the details given on the nameplate. Check product compatibility of the wetted parts by means of the order data.

The electronic signal output may only be connected to intrinsically safe circuits. Depending on the instrument design, the following maximum values apply per circuit:

Design DK3./....././....-Ex

U_I	16 VDC
I_I	52 mA
P_I	169 mW

Design DK3./....././....A-Ex

U_I	16 VDC
I_I	25 mA
P_I	64 mW

Irrespective of the instrument design the following values are to be observed for each intrinsically safe circuit in case of interconnection:

C_I	150 nF
L_I	150 µH

4.1 Connection assignment

The electrical connection of the limit switches is implemented at the version with Connector (S) in the wiring space of the connector housing in accordance with the connection diagram in the standard installation and operating instructions.

Connecting cable

The connecting cables for the intrinsically safe circuits are to be selected in accordance with the valid installation standard (e.g. EN 60079-14 / VDE 0165).

Setting of the limit switches may be carried out during operation. Remove the housing cover to this purpose. The housing cover has to be closed immediately after the limit switches have been set.

5.1 Start-up

The following tests are to be carried out before start-up:

- Testing of the materials used in the measuring cone and the sealing material used for suitability with regard to sufficient resistance to corrosion from the medium.
- Correct connection of the limit switches

Servicing which is relevant to safety in the sense of explosion protection may only be carried out by the manufacturer, his representative or under the supervision of authorized inspectors.

6.1 Maintenance

Display

The display part is maintenance-free under common operating conditions and when used properly. The following regular visual inspections should be carried out within the context of the checks and inspections required for installations in explosion-hazardous areas intended to maintain the proper state:

- Inspection of the housing, the cable entries and the feed lines for corrosion and damage.
- Inspection of the measuring unit and, if appropriate, of the needle valve for leaks.

Measuring unit

The measuring unit is maintenance-free under common operating conditions and when used properly. However, depending on the application, unfavorable operating conditions may cause the measuring function to be impaired through soiling of the measuring cone or of the float. The measuring unit is to be cleaned in accordance with the installation and operating instructions for non-explosion-protected designs. Cleaning requires the removal of the measuring unit. The specifications on replacing the entire instrument are to be observed.

6.2 Dismantling

Replacing the display part

Thanks to the modular structure of the variable area flowmeters, it is possible to replace the display. The measurement tube can remain in the pipeline. This also applies to pressurized lines.

Replacement and removal should be carried out in a de-energized state as far as possible. If this is not possible, the constraints for intrinsic safety (e.g. no grounding or interconnection of different intrinsically safe circuits) are to be observed during dismantling.

Replacing the entire instrument

CAUTION!

Pressurized lines have to be relieved before the measuring unit is removed.
Uncontrolled discharge of residual fluids from the measuring unit is to be avoided.
In case of environmentally critical media, those parts of the measurement tube coming into contact with the medium are to be decontaminated thoroughly after dismantling.
Removal and installation lie within the responsibility of the owner-operator.

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KROHNE measuring technology - Product overview

- Electromagnetic flowmeters
- Variable area flowmeters
- Mass flowmeters
- Ultrasonic flowmeters
- Vortex flowmeters
- Flow controllers
- Level measuring instruments
- Temperature measuring instruments
- Pressure measuring instruments
- Analysis
- Oil and gas industry

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