



IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.:	IECEx KIWA 18.0007X	Page 1 of 4	<u>Certificate history:</u> Issue 0 (2019-04-10)
Status:	Current	Issue No: 1	
Date of Issue:	2020-04-02		
Applicant:	KROHNE Messtechnik GmbH Ludwig-Krohne-Straße 5 47058 Duisburg Germany		
Equipment:	Variable Area Flowmeters types DK3. /ESK/ .. / .. / .. – Ex, DK3. / K. / .. / .. / .. – Ex, and DK3. / R1 / .. / .. / .. – Ex		
Optional accessory:			
Type of Protection:	Ex ia, db, tb, ec, nA		
Marking:	Ex ia IIC T6...T1 Gb, Ex ia IIIC T85 °C...T140 °C Db, Ex db IIC T6...T1 Gb, Ex tb IIIC T85 °C...T140 °C Db, Ex ec IIC T6...T1 Gc, Ex nA IIC T6...T1 Gc		

Approved for issue on behalf of the IECEx
Certification Body:

Harry de Wild

Position:

Certification Officer

Signature:
(for printed version)

Date:

2 April 2020

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2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting www.iecex.com or use of this QR Code.



Certificate issued by:

Kiwa Nederland B.V. (Unit Kiwa ExVision)
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Netherlands





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Manufacturer: **KROHNE Messtechnik GmbH**
Ludwig-Krohne-Straße 5
47058 Duisburg
Germany

Additional
manufacturing
locations:

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended

STANDARDS :

The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards

IEC 60079-0:2017 Explosive atmospheres - Part 0: Equipment - General requirements
Edition:7.0

IEC 60079-1:2014-06 Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
Edition:7.0

IEC 60079-11:2011 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
Edition:6.0

IEC 60079-15:2010 Explosive atmospheres - Part 15: Equipment protection by type of protection "n"
Edition:4

IEC 60079-31:2013 Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"
Edition:2

IEC 60079-7:2015 Explosive atmospheres – Part 7: Equipment protection by increased safety "e"
Edition:5.0

This Certificate **does not** indicate compliance with safety and performance requirements other than those expressly included in the Standards listed above.

TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in:

Test Reports:

[NL/KIWA/ExTR18.0008/00](#)

[NL/KIWA/ExTR18.0008/01](#)

Quality Assessment Report:

[DE/PTB/QAR06.0002/05](#)



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EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

The Variable Area Flowmeters types DK3. /ESK/ .. / . / .. / .. – Ex, DK3. / K. / .. / . / .. / .. – Ex, and DK3. / R1 / .. / . / .. / .. – Ex are devices that are intended to measure the volume flow of flammable and non-flammable gasses and liquids. The flowmeters are equipped with a mechanical display and a 4...20 mA current output interface, with up to two MIN/MAX limit switches (NAMUR) or a reed contact.

For further details on the nomenclature and thermal and electrical data see the annex.

SPECIFIC CONDITIONS OF USE: YES as shown below:

1. The Variable Area Flowmeters with coated parts shall be installed and maintained such that the risk of electrostatic discharge is minimized.
2. For thermal data and electrical data, refer to the annex.
3. For EPL Gc, types of protection Ex ec and Ex nA:
 - a) The Variable Area Flowmeters type DK3. /ESK/ .. / . / .. / .. – Ex;
 - 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.
 - b) The Variable Area Flowmeters type DK3. / K. / .. / . / .. / .. – Ex;
 - 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.



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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)

- Upgrade from IEC 60079-0 edition 6 to edition 7.
- Correction of process temperature tables for Type DK3. / K. / .. / . / .. / .. – Ex.

Annex:

[CoC KIWA 18.0007X Iss 1-Annex.pdf](#)

Nomenclature

DK3. / .. / .. / .. / .. - Ex
 1 / 2 / 3 / 4 / 5 / 6 - Ex

1 = Series	DK32 = Measuring unit with valve and horizontal connections DK34 = Measuring unit without valve and vertical connections
2 = Optional pressure regulator	RE = Inlet pressure regulator RA = Outlet pressure regulator
3 = Type of signal indicator	ESK = Current output K1 = One limit switch K2 = Two limit switches (min. and max.) R1 = Reed switch
4 = Type of connection	L = Cable assembly S = Connection plug
5 = Optional HT	HT = High temperature version (only in combination with reed switch (3 = R1) and cable assembly (4 = L)
6 = designation not relevant for Ex	-
Note: Non indicated designations can be skipped	

The type of protection is not applicable for all types in the series as indicated in the following table:

Type	Type of protection	Ex ia IIC	Ex ia IIIC	Ex ec / nA	Ex db IIC	Ex tb IIIC
DK3. /ESK/ .. / .. / .. - Ex		X	X	X	X	X
DK3. / K. / .. / .. / .. - Ex		X	X	X	-	-
DK3. / R1 / .. / .. / .. - Ex		X	-	-	-	-

Thermal data

The temperature class or surface temperature in relation to the maximum ambient temperature and the maximum process temperature is listed in the following tables:

Type DK3. /ESK/ .. / .. / .. - Ex

	Maximum process temperature [°C]													
	T6			T5			T4				T3...T1			
Ambient temperature [°C]	40	50	55	50	65	70	40	60	65	70	40	60	65	70
DK3/ESK/	85	85	85	100	100*	90*	135*	105*	100*	90*	140*	105*	100*	90*

* Heat-resistance cable and cable entry ≥ 90 °C

Type DK3. / K. / .. / .. / .. - Ex

Limit switch input power	Maximum process temperature [°C] with Connection plug (S) or Cable assembly (L)															
	T6			T5			T4					T3...T1				
Ambient temperature [°C]	40	50	55	40	50	55	40	60	65	70	90	40	60	65	70	90
SC2-NO 64 mW	80	70	65	100	100	95	135	125	120*	120*	100*	140*	125*	120*	120*	100*
SC2-NO 169 mW	-	-	-	55	-	-	90	75	70	-	-	90	75	70	-	-
SJ2-SN 64 mW	80	70	70	100	100	95	135	125	120*	120*	100*	140*	125*	120*	120*	100*
SJ2-SN 169 mW	-	-	-	60	55	-	95	80	75*	70*	-	95	80	75*	70*	-
I7S2002-N 64 mW	85	80	75	100	100	100	135	125	120*	120*	100*	140*	125*	120*	120*	100*
I7S2002-N 169 mW	55	-	-	80	70	70	135	120	115*	110*	95*	135*	120*	115*	110*	95*

* Heat-resistance cable and cable entry ≥ 90 °C

Annex to :

Certificate of Conformity IECEx KIWA 18.0007X, issue 1
IECEx TEST REPORT NL/KIWA/ExTR18.0008/01



Type DK3. / R1 / .. / .. / .. – Ex

Reed switch	Maximum process temperature [°C] with Connection plug (S (not for HT)) or Cable assembly (L)							
	T6	T5		T4		T3...T1		
Ambient temperature [°C]	55	70	85	70	90	100	145	180
DK3./ R1 /.	85	100*	-	135*	-	150*	-	-
DK3./ R1 / L / HT	85	-	100	-	135	-	200	180

* Heat-resistance cable and cable entry ≥ 90 °C

The minimum ambient temperature is -40 °C; the minimum process temperature is -40 °C.

The maximum surface temperature T85 °C is determined for a dust layer thickness of maximum 5 mm and applies for a maximum ambient temperature of 65 °C and a maximum process temperature of 75 °C. For a process temperature > 75 °C, the maximum surface temperature is equal to the process temperature up to a maximum of 140 °C.

Electrical data

Type DK3. /ESK/ .. / .. / .. – Ex

Supply and output circuit (terminals +/-):

in type of protection intrinsic safety Ex ia IIC and Ex ia IIIC, only for connection to an intrinsically safe circuit, with the following maximum values:

$U_i = 30$ V; $I_i = 130$ mA; $P_i = 1$ W; $C_i = 10$ nF; $L_i = 0$ μ H.

or

in types of protection Ex db, Ex ec, Ex nA or Ex tb:

$U_N = 12 \dots 32$ V; $I_N = 4 \dots 20$ mA.

Type DK3. / K. / .. / .. / .. – Ex

Supply and output circuits (terminals Max+/- and/or Min+/-):

in type of protection intrinsic safety Ex ia IIC and Ex ia IIIC, only for connection to an intrinsically safe circuit, with the following maximum values (for each +/- circuit individually):

$U_i = 16$ V; $I_i = 25 / 52$ mA; $P_i = 64 / 169$ mW;

$C_i = 150$ nF (fixed cable up to 10 m) or 152 nF (fixed cable from 10 m up to 20 m); $L_i = 150$ μ H.

or

in types of protection and Ex ec or Ex nA:

$U_N = 8$ VDC (in accordance with IEC 60947-5-6 (NAMUR))

Type DK3. / R1 / .. / .. / .. – Ex

Supply and output circuit (terminals 1,2,3 or bn,bu,rd):

in type of protection intrinsic safety Ex ia IIC and Ex ia IIIC, only for connection to an intrinsically safe circuit, with the following maximum values:

$U_i = 30$ V; $I_i = 100$ mA; $P_i = 1$ W; $C_i = 0$ nF; $L_i = 0$ μ H.