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 PTB 11.0069X**	Page 1 of 5	Certificate history:
Status:	**Current**	Issue No: 2	Issue 1 (2019-09-17) Issue 0 (2011-08-03)
Date of Issue:	2021-01-11		
Applicant:	**KROHNE Messtechnik GmbH** Ludwig – Krohne Straße 5 47058 Duisburg **Germany**		
Equipment:	**Variable-area flowmeter, type H250.../M40...-Ex and the indicator unit, type M40...-Ex..**		
Optional accessory:			
Type of Protection:	**Intrinsic Safety or Increased Safety**		
Marking:	Ex ia IIC T6 ... T2 Gb or Ex ia IIIC T70°C ... T300°C Db or Ex ec IIC T6 ... T2 Gc		

Approved for issue on behalf of the IECEx Certification Body:	**Dr.-Ing. F. Lienesch**
Position:	**Head of Department "Explosion Protection in Sensor Technology and Instrumentation"**
Signature: (for printed version)	
Date:	15.1.21

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Certificate issued by:

Physikalisch-Technische Bundesanstalt (PTB)
Bundesallee 100
38116 Braunschweig
Germany

Physikalisch-Technische Bundesanstalt
Braunschweig und Berlin

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Certificate No.: **IECEx PTB 11.0069X**

Date of issue: 2021-01-11

Issue No: 2

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

Additional manufacturing locations: **KROHNE Marshall Pvt Ltd**
A -34/35, MIDC Industrial Area
H Block, Pimpri
Pune 411 018
India

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

IEC 60079-7:2017 Explosive atmospheres - Part 7: Equipment protection by increased safety "e"
Edition:5.1

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:

DE/PTB/ExTR19.0034/00 DE/PTB/ExTR19.0034/01

Quality Assessment Reports:

DE/PTB/QAR06.0002/05 GB/CML/QAR16.0006/03

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EQUIPMENT:
Equipment and systems covered by this Certificate are as follows:

The variable-area flowmeter, type H250.../M40...-Ex and the indicator unit, type M40...-Ex.. are used for the measurement of the volumetric flow of flammable and non-flammable gases and liquids. It consists of a measuring part of type series H250 and an indicator unit of type series M40. The M40 indicator unit accommodates the electronic assemblies. It consists of an enclosure with built-in module carrier and a mechanical indicator with measuring element. The indicator unit can be equipped with several electronic modules for signal analysis.

For further information as well as the thermal and electrical specifications, reference is made to the annex.

SPECIFIC CONDITIONS OF USE: YES as shown below:
For special conditions reference is made to the annex.

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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)
An alternative manufacturing site will be introduced.

Revision of the type labels and documentation regarding the additional manufacturing site.

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Additional information:
For special conditions as well as thermal and electrical specifications, reference is made to the annex.

Annex:

COCA110069X-02_1.pdf

Applicant:	Krohne Messtechnik GmbH
Electrical Apparatus:	Variable-area flowmeter, type H250.../M40...-Ex and indicator unit, type M40...-Ex

Description of equipment

The variable-area flowmeter, type H250.../M40...-Ex and the indicator unit, type M40...-Ex are used for the measurement of the volumetric flow of flammable and non-flammable gases and liquids. It consists of a measuring part of type series H250 and an indicator unit of type series M40. The measuring part can be operated in pipings running vertically or horizontally. The measurand is determined by a float reaching a specific position proportional to the volumetric flow. A follower magnet in the indicator unit converts this position into a rotation angle which is then transmitted to an indicator system.

The M40 indicator unit accommodates the electronic assemblies. It consists of an enclosure with built-in module carrier and a mechanical indicator with measuring element. The indicator unit can be equipped with several electronic modules for signal analysis.

Furthermore, a high temperature (HT) variant and different enclosure materials (aluminium / stainless steel) are available.

The signal circuits are designed either to type of protection Intrinsic Safety ia or ib, or to type of protection Increased Safety ec which enables the application as either category 2 - or category 3 - equipment.

Permissible range of the ambient temperature:	-40 (-25) °C up to +65 °C (depending on the design).
Permissible range of the medium temperature:	-40 °C up to +300 °C (depending on the design).
Permissible range of the temperature at the reference point:	-40 (-25) °C up to +90 °C (depending on the design).

For relationship between maximum permissible medium temperature, temperature class, maximum permissible ambient temperature and the design, reference is made to the tables given in the operating instructions manuals.

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Electrical data

Application as category 2-equipment, EPL Gb and Db

Indicator unit M40/ESK/...

with 4...20 mA signal output (HART) ESK4A terminals 11, 12 or HAN 7D connector pins 5, 6	type of protection Intrinsic Safety Ex ia IIC / IIIC or Ex ib IIC / IIIC Only for connection to certified intrinsically safe circuits. Maximum values: U_i = 30 V I_i = 130 mA P_i = 1 W L_i = 10 µH C_i negligibly low
optionally ESK4-T with ESK4-I/O module and display ESK4-I/O terminals 1, 2 or 4, 5 (NAMUR) ESK4-I/O terminals 1, 3 or 4, 6 (OC) or HAN 7D connector pins 1, 2 or 3, 4 ESK4-I/O terminals 7, 8 (input)	type of protection Intrinsic Safety Ex ia IIC / IIIC or Ex ib IIC / IIIC Only for connection to certified intrinsically safe circuits. Maximum values: U_i = 30 V I_i = 130 mA P_i = 1 W L_i negligibly low C_i = 10 nF

or

with Profibus PA interface FISCO field device ESK4-PA terminals D, D-	type of protection Intrinsic Safety Ex ia IIC / IIIC or Ex ib IIC / IIIC Only for connection to certified intrinsically safe circuits. Maximum values: U_i = 24 V I_i = 380 mA P_i = 5.32 W L_i negligibly low C_i negligibly low or for connection to a bus circuit according to the FISCO-model

or

with Foundation Fieldbus interface
FISCO field device
ESK4-FF terminals D, D-

type of protection Intrinsic Safety Ex ia IIC / IIIC
or Ex ib IIC / IIIC
Only for connection to certified intrinsically safe circuits.

Maximum values:

U_i = 24 V
I_i = 380 mA
P_i = 5.32 W
L_i negligibly low
C_i negligibly low

or for connection to a bus circuit according to the FISCO-model

Indicator unit M40/.../K.
with NAMUR limit switch
terminals 1, 2 or 4, 5
HAN 7D connector pins 1, 2 or 3, 4

type of protection Intrinsic Safety Ex ia IIC / IIIC
or Ex ib IIC / IIIC
Only for connection to certified intrinsically safe circuits.
The maximum values per circuit depend on the limit switches used as specified in the following table:

Limit switch, type	U_i [V]	I_i [mA]	P_i [mW]	L_i [µH]	C_i [nF]
SC3,5-N0-Y.... I7S23,5-N	16	25	64	150	150
	16	52	169	150	150
SJ3,5-SN SJ3,5-S1N	16	25	64	100	30
	16	52	169	100	30

Indicator unit M40/.../R.

with Reed switch
terminals 1, 3 or 4, 6 or
HAN 7D connector pins 1, 2 or 3, 4

type of protection Intrinsic Safety Ex ia IIC / IIIC
or Ex ib IIC / IIIC
Only for connection to certified intrinsically safe circuits.

Maximum values:

U_i = 30 V
I_i = 130 mA
P_i = 1 W
L_i negligibly low
C_i negligibly low

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Application as category 3-equipment, EPL Gc

Indicator unit M40/ESK/...

with 4...20 mA signal output (HART) ESK4A terminals 11, 12 or HAN 7D connector pins 5, 6	type of protection Increased Safety ec Nominal values: U = 14 – 30 V I = 4 – 20 mA
optionally ESK4-T with ESK4-I/O Modul and display	type of protection Increased Safety ec Nominal values:
ESK4-I/O terminals 1, 2 or 4, 5 (NAMUR)	U = 8 VDC I = 1 mA / 3 mA
ESK4-I/O terminals 1, 3 or 4, 6 (OC) or HAN 7D connector pins 1, 2 or 3, 4	U < 30 VDC I < 100 mA
ESK4-I/O terminals 7, 8 (input)	U < 30 VDC I < 2 mA
or	
with Profibus PA interface ESK4-PA terminals D, D-	U = 9 – 32 V I = 16 mA
or	
with Foundation Fieldbus interface ESK4-FF terminals D, D-	U = 9 – 32 V I = 16 mA

Indicator unit M40/.../K. with slot-type limit switch	type of protection Increased Safety ec Nominal values depend on type of limit switch
terminals 1, 2 or 4, 5 HAN 7D connector pins 1, 2 or 3, 4	U < 30 V I < 100 mA
Indicator unit M40/.../R. with Reed switch terminals 1, 3 or 4, 6 HAN 7D connector pins 1, 2 or 3, 4	type of protection Increased Safety ec Nominal values: U < 24 V I < 100 mA

Special conditions for safe use

1. The connection facilities for the equipotential bonding conductor of the H250 measuring part or the M40 indicator unit shall be connected to the equipotential bonding system of the hazardous area.
2. When the material titanium is used for measuring parts the generation of sparks due to impact or friction between titanium and other materials shall be prevented (appropriately protected installation)
3. When the system is operated with flammable media the measuring parts shall be included in the recurring pressure test of the system.
4. The cable glands and blind plugs provided with the enclosure (or equivalent types) shall be used to ensure a sufficient degree of IP-protection and for sealing non-used openings.
5. To avoid the risk of electrostatic charge the variable-area flowmeter, type H250.../M40...-Ex and the indicator unit, type M40...-Ex shall not be used in areas where severely charge generating processes are to be assumed. The corresponding notes in the operating instructions manual shall be observed.
6. For permissible ambient and medium temperatures reference is made to the tables given in the operating instructions manual. All further specifications and notes shall be considered correspondingly.

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