



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 12.0034**

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Certificate history:

Status: **Current**

Issue No: 2

Issue 1 (2017-12-18)

Issue 0 (2012-07-25)

Date of Issue: 2021-01-11

Applicant: **KROHNE Messtechnik GmbH**
Ludwig-Krohne-Str. 5
47058 Duisburg
Germany

Equipment: **Variable area flow meter and indicator, type H250./../...../M40./../...../-Ex-.. and M40./../...../-Ex-..**

Optional accessory:

Type of Protection: **Flameproof Enclosure, Dust Protection by Enclosure**

Marking: **Ex db IIC T6 ... T1 Gb or**
Ex tb IIIC T70°C ... T300°C Db

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

1. This certificate and schedule may only be reproduced in full.
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:

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





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Manufacturer: **KROHNE Messtechnik GmbH**
Ludwig-Krohne-Str. 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 60079-1:2014-06 Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
Edition:7.0

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

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/ExTR12.0050/01](#)

[DE/PTB/ExTR12.0050/02](#)

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 flow meters H250./.../M40./.../...-Ex-.. and indicator M40./.../...-Ex-.. manufactures by KROHNE Messtechnik GmbH are suitable for measuring gases, vapours and liquids. Different functionalities, depending on the built-in modules for signal processing, are available. Possible are:

- Current output 4-20 mA
- Limit switches (max. 2) with O/C- or NAMUR-output (2-wire)
- Limit switches (max. 2) with pnp-output (3-wire)
- Reed switches (max. 2) with contact-output
- Signal output for bus communication (PROFI-BUS or FieldBus-FF)

Connection of the up to 4 separated external circuits is effected in type of protection "flameproof" or "protection by enclosure". Electrical connections for the circuits designed as internal plug connectors.

For further specifications please refer to the attachment.

SPECIFIC CONDITIONS OF USE: NO



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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.

Update of the Test Report regarding the IEC 60079-0:2017, Ed. 7.0 to the current state of standards.



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Additional information:

For technical, electrical and thermal specifications as well as additional notes for safe operation, reference is made to the annex.

Annex:

[COCA120034-02.pdf](#)



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

Description of equipment

The variable-area flowmeter, type H250.../M40.../...-Ex-.. and the indicator, type M40.../...-Ex-.. are intended for measuring volumetric flow rates of flammable and non-flammable gases and liquids in pipelines. A float in the measuring unit adjusts itself to a position where the forces acting on the float are balanced. Permanent magnets provided inside the float transmit its position to a sequential magnet in the display unit. Electromagnetic position sensors in the display unit convert the position of the float into an appropriate electrical output signal.

Metering units of the H250.-type series and the indicator of M40-type series are applied. The M40 display consists of the MH40 enclosure certified under PTB 11 ATEX 1015 U component certificate, and electronic elements for signal analysis.

Technical data

Operating pressure at metering unit H250 (depending on construction):	16 ... 40 (200) bar
Medium temperature (depending on model):	-40 °C up to +300 °C
Temperature at reference point: (ext. PA connection at M40 display)	-40 (-25) °C up to +88 °C
Ambient temperature (depending on model)	-40 (-25) °C up to +65 °C

Ingress protection IP 66 / 67 in accordance with EN 60529

Electrical data

Power supply (protective-extra-low-voltage PELV)

M40 / ESK indicator

with ESK4... signal output
terminals 11, 12

$U_N = 14 - 32 \text{ V}$
 $I_N = 4 - 20 \text{ mA}$
standardized 4...20 mA current signal with
superimposed HART ® communication sig-
nal designed as 2-wire connection

M40 / ESK indicator

with ESK4... converter
terminals 11, 12

$U_N = 14 - 32 \text{ V}$
 $I_N = 4 - 20 \text{ mA}$
standardized 4...20 mA current signal with
superimposed HART ® communication sig-
nal designed as 2-wire connection

and I/O module

binary output 1, terminals 1, 3 (OC)
binary output 2, terminals 4, 6 (OC)

or

binary output 1, terminals 1, 3 (NAMUR)
binary output 2, terminals 4, 6 (NAMUR)

and

status input, terminals 7, 8 (input)

nominal value per circuit:

$U_N = 8 - 32 \text{ V}$ (open collector, pnp output)
 $I_N \leq 100 \text{ mA}$

$U_N = 8 \text{ V}$ (depending on switching position)
 $I_N \leq 1 / \geq 3 \text{ mA}$

$U_N = 8 - 32 \text{ V}$
 $I_N < 2 \text{ mA}$

M40 / ESK indicator

with ESK4-FF signal output or
ESK4-PA signal output
bus connection, terminals D, D[⊥]

for connection to fieldbus systems

$U_N = 9 - 32 \text{ V}$
 $I_N = 16 \text{ mA}$

Manchester coded current signal
for connection to Foundation Fieldbus
or Profibus-PA

M40 / K. indicator

limit switch (2-wire type)
terminals 1, 2 / 4, 5

or

limit switch (3-wire type)
terminals 1, 2, 3 / 4, 5, 6

nominal value per circuit:

$U_N = 5 - 25 \text{ V}$
 $I_N \leq 1 / \geq 3 \text{ mA}$ (depending on switching
position)

$U_N = 10 - 30 \text{ V}$
 $I_N < 100 \text{ mA}$ (depending on switching
position)

M40 / R. indicator

with Reed contact
terminals 1, 2, 3 / 4, 5, 6

nominal value per circuit:

$U_N = 0 - 32 \text{ V}$
 $I_N \leq 100 \text{ mA}$ (depending on switching
position)

Temperatures

Heating jacket		HT version	TK ►	Permitted measuring temperature T_m [°C]					
with-out	with		T_{amb} [°C] ►	T6	T5	T4	T3		T2 ... T1
				≤ 60	≤ 65	≤ 65	≤ 60	≤ 65	≤ 60 ≤ 65
DN15, DN25, DN50	DN15, DN25	X		85	100	135	200	175	200 175
DN80, DN100	DN50, DN80	X		85	100	135	200	200	300 300

Table 1 Measuring and ambient temperatures H250.../M40.../...../..-Ex-..
Continuous operating temperature of connection cable and cable gland min. 90°C

Heating jacket		HT version	TK ►	Permitted measuring temperature T_m [°C]							
with-out	with		T_{amb} [°C] ►	T6	T5		T4		T3		T2 ... T1
				≤ 60	≤ 60	≤ 65	≤ 60	≤ 65	≤ 60	≤ 65	≤ 60 ≤ 65
DN15, DN25, DN50	DN15, DN25	X		85	100	75	105	75	105	75	105 75
DN80, DN100	DN50, DN80	X		85	100	95	135	95	175	95	175 95
				85	90	75	90	75	90	75	90 75
				85	100	90	135	90	155	90	155 90

Table 2 Measuring and ambient temperatures H250.../M40.../...../..-Ex-..
Continuous operating temperature of connection cable and cable gland min. 70°C

Heating jacket		TK ►	Permitted measuring temperature T_{Ref} [°C]		
with-out	with	$T_{connection\ cable}$ [°C] ►	T6 ... T1	T6	T5 ... T1
			standard (70 °C)	heat resistant (90 °C)	
DN15, DN25, DN50, DN80, DN100	DN15, DN25, DN50, DN80		64	74	84

Table 3 Maximum permitted temperature at the reference point H250.../M40.../...../..-Ex-.. and indicator, type M40.../...../..-Ex-..
Continuous operating temperature of connection cable and cable gland 70°C or 90°C, respectively.



Additional notes for safe operation:

Components attached or installed (e.g. terminal compartments, bushings, cable glands, connectors) shall be of a technical standard that complies with the specifications on the cover sheet. They shall be suited for the operating conditions and have a separate examination certificate. The special conditions specified for the components shall be complied with, and the components shall be included in the type test, if necessary. This applies also to components already mentioned in the technical description.

Connection conditions

1. The variable-area flowmeter, type H250.../M40.../...../..-Ex.. and the indicator, type M40.../...../..-Ex.. shall be connected by suitable cable glands or conduit systems that meet the requirements of EN 60079-1, sections 13.1 and 13.2, and for which a separate examination certificate has been issued. If the variable-area flowmeter, type H250.../M40.../...../..-Ex.. and the indicator, type M40.../...../..-Ex.. are connected to conduit systems, the associated sealing device shall be mounted directly onto the enclosure.
2. Cable glands (screwed conduit entries) and blanking plugs of a simple design shall not be used.
3. Openings that are not used shall be sealed according to EN 60079-1, section 11.9.
4. If connection is made in the hazardous area, the connecting cable of the variable-area flowmeter, type H250.../M40.../...../..-Ex.. and the indicator, type M40.../...../..-Ex.. shall be connected inside of an enclosure that meets the requirements of an approved type of protection in accordance with EN 60079-0, section 1.
5. The connecting cable of the variable-area flowmeter, type H250.../M40.../...../..-Ex.. and the indicator, type M40.../...../..-Ex.. shall be laid as permanent installation and as such, that it is sufficiently protected against mechanical damage.
6. If the temperature at the entry fittings exceeds 70 °C, temperature-resistant connecting cables shall be used
7. The variable-area flowmeter, type H250.../M40.../...../..-Ex.. and the indicator, type M40.../...../..-Ex.. shall be included into the local equipotential bonding system of the hazardous area.

These notes and instructions shall accompany each device in an appropriate form.

To avoid the risk of ignition as a result of electrostatic charging, variable-area flowmeters must not be used in locations in which

- high charge generating processes,
- mechanical friction and separation processes,
- electron emission (e.g. near electrostatic coating equipment),

may occur.

Operation with flammable media is permitted only, if under operating conditions no potentially explosive medium/air-mixture is formed inside the flowmeter. If flammable media are used, the metering units shall be included into the recurring pressure test for the system.

For the H250/C... version (PTFE design, non-conductive), the medium shall have a minimum conductivity of 10⁻⁸ S/m, in order to avoid the risk of electrostatic charging.