



IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification Scheme for Explosive Atmospheres

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

Certificate No.: IECEx PTB 17.0033X

Issue No: 0

Certificate history:

[Issue No. 0 \(2017-08-14\)](#)

Status: **Current**

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Date of Issue: **2017-08-14**

Applicant: **Krohne Messtechnik GmbH**
Ludwig-Krohne-Straße 5, 47058 Duisburg, Germany
Germany

Equipment: **Electronic signal output, Module types ESK4... , ESK4-I/O, ESK4-FF, ESK4-PA**
Optional accessory:

Type of Protection: **Intrinsic Safety**

Marking:
Ex ia IIC T6 ... T1 Gb

Approved for issue on behalf of the IECEx
Certification Body:

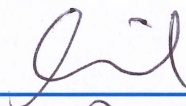
Dr.-Ing. Lienesch

Position:

Head of Department "Explosion Protection in Sensor Technology and Instrumentation"

Signature:
(for printed version)

Date:


17.8.17

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 the [Official IECEx Website](#).

Certificate issued by:

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





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

Additional Manufacturing location(s):

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 electrical apparatus 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 : 2011 Explosive atmospheres - Part 0: General requirements

Edition:6.0

IEC 60079-11 : 2011 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "I"

Edition:6.0

*This Certificate **does not** indicate compliance with electrical 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 Report:

[DE/PTB/ExTR17.0034/00](#)

Quality Assessment Report:

[DE/PTB/QAR06.0002/04](#)



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Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

The electronic signal output consists of the module-types ESK4... , ESK4-I/O, ESK4-FF, ESK4-PA and it is used for the determination of the position of magnetic sensors. The equipment is intended for the installation into display units inside the hazardous area. Electrical connection is designed for two-wire technique in type of protection Intrinsic Safety. A standardized 4...20 mA current signal with superimposed HART-communication is provided as an output signal. The modules type ESK4-FF and type ESK4-PA are intended for the connection to intrinsically bus systems (Fieldbus FF or Profi Bus PA). The module ESK4-I/O is also available with an optional display. Auxiliary power supply is provided either by the ESK4.. module or by the modules type ESK4-FF or type ESK4-PA. All electrical connections between different modules are system-internal circuits designed to Intrinsic Safety type of protection.

SPECIFIC CONDITIONS OF USE: YES as shown below:

1. The electronic signal output, module types ESK4... , ESK4-I/O, ESK4-FF , ESK4-PA shall be mounted into an enclosure which meets the degree of protection IP20 according to EN 60529 as a minimum.
2. The enclosure of the electronic signal output consists of plastic material which can charge electrostatically. A note in the operating instruction manual and a warning label on the equipment shall point to this risk.
3. For permissible range of the ambient temperature depending on the temperature class, reference is made to the operating instruction manual.



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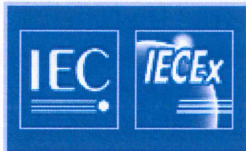
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Additional information:

For thermal and electrical specifications, reference is made to the annex.

Annex:

[Annex to IECEx PTB 17.0033X-issue-0.pdf](#)



Applicant: Krohne Messtechnik GmbH
Electrical apparatus: Electronic signal output,
Module types ESK4... , ESK4-I/O, ESK4-FF , ESK4-PA

The electronic signal output consists of the module-types ESK4... , ESK4-I/O, ESK4-FF, ESK4-PA and it is used for the determination of the position of magnetic sensors. The equipment is intended for the installation into display units inside the hazardous area. Electrical connection is designed for two-wire technique in type of protection Intrinsic Safety. A standardized 4...20 mA current signal with superimposed HART-communication is provided as an output signal. The modules type ESK4-FF and type ESK4-PA are intended for the connection to intrinsically bus systems (Fieldbus FF or Profi Bus PA). The module ESK4-I/O is also available with an optional display. Auxiliary power supply is provided either by the ESK4.. module or by the modules type ESK4-FF or type ESK4-PA. All electrical connections between different modules are system-internal circuits designed to Intrinsic Safety type of protection.

For relationship between module type, temperature class and permissible range of the ambient temperature, reference is made to the following table:

Module type	Temperature class		
	T6	T5	T4 ... T1
	Permissible range of the ambient temperature		
ESK4. and ESK4-I/O	-40 °C ... +60 °C	-40 °C ... +75 °C	-40 °C ... +85 °C
ESK4. and ESK4-FF or ESK4-PA	-40 °C ... +55 °C	-40 °C ... +70 °C	-40 °C ... +85 °C

Electrical data:

Module ESK4.

Supply and signal circuit
(terminals 11 and 12)

type of protection Intrinsic Safety Ex ia IIC or
Ex ib IIC
only for connection to a certified intrinsically
safe circuit

Maximum values:

$U_i = 30 \text{ V}$
 $I_i = 130 \text{ mA}$
 $P_i = 1 \text{ W}$
 $L_i = 10 \text{ } \mu\text{H}$
 C_i negligibly low

Output signal

standardized 4...20 mA current signal with
superimposed HART-communication in 2-wire
connection



Module ESK4-I/O

(Output 1: terminals 1, 2, 3
Output 2: terminals 4, 5, 6)

type of protection Intrinsic Safety Ex ia IIC or
Ex ib IIC

only for connection to certified intrinsically
safe circuits

Maximum values per circuit:

$U_i = 30 \text{ V}$
 $I_i = 130 \text{ mA}$
 $P_i = 1 \text{ W}$
 L_i negligibly low
 $C_i = 10 \text{ nF}$

Control input, internal counter
(terminals 7, 8)

type of protection Intrinsic Safety Ex ia IIC or
Ex ib IIC

only for connection to a certified intrinsically
safe circuit

Maximum values:

$U_i = 30 \text{ V}$
 $I_i = 130 \text{ mA}$
 $P_i = 1 \text{ W}$
 L_i negligibly low
 $C_i = 10 \text{ nF}$

Modules ESK4-FF / ESK4-PA

Bus-connection
(terminals D, D \perp)

type of protection Intrinsic Safety Ex ia IIC or
Ex ib IIC

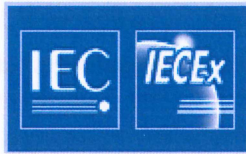
only for connection to a certified intrinsically
safe circuit

Maximum values:

$U_i = 24 \text{ V}$
 $I_i = 380 \text{ mA}$
 $P_i = 5.32 \text{ W}$
 L_i negligibly low
 C_i negligibly low

or

FISCO FIELD DEVICE for connection to a bus
circuit according to the FISCO-model



Internal module circuits

Module ESK4., passive (connector X2)

type of protection Intrinsic Safety Ex ia IIC
only for connection to a certified intrinsically
safe circuit

Maximum values:

$U_i = 10 \text{ V}$
 $I_i = 1600 \text{ mA}$
 $P_i = 1 \text{ W}$
 L_i negligibly low
 C_i negligibly low

Module ESK4., active (connector X2)

type of protection Intrinsic Safety Ex ia IIC
internal circuit

Maximum values:

$U_o = 7.26 \text{ V}$
 $I_o = 2317 \text{ mA}$
 $P_o = 1 \text{ W}$
 $L_o = 22 \text{ } \mu\text{H}$
 $C_o = 3.3 \text{ } \mu\text{F}$

Module ESK4-I/O, passive (connector X2)

type of protection Intrinsic Safety Ex ia IIC
only for connection to a certified intrinsically
safe circuit

Maximum values:

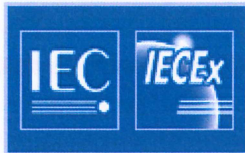
$U_i = 7.26 \text{ V}$
 $I_i = 2317 \text{ mA}$
 $P_i = 1 \text{ W}$
 $L_i = 22 \text{ } \mu\text{H}$
 $C_i = 3.3 \text{ } \mu\text{F}$

Module ESK4-I/O, active (connector X3)

type of protection Intrinsic Safety Ex ia IIC
internal circuit

Maximum values:

$U_o = 7.26 \text{ V}$
 $I_o = 71 \text{ mA}$
 $P_o = 129 \text{ mW}$
 $L_o = 5 \text{ } \mu\text{H}$
 $C_o = 10 \text{ } \mu\text{F}$



Module ESK4-I/O (display), passive
(connector X1)

type of protection Intrinsic Safety Ex ia IIC
only for connection to a certified intrinsically
safe circuit

Maximum values:

$$\begin{aligned}U_i &= 7.26 \text{ V} \\I_i &= 71 \text{ mA} \\P_i &= 129 \text{ mW} \\L_i &= 5 \text{ } \mu\text{H} \\C_i &= 10 \text{ } \mu\text{F}\end{aligned}$$

Modules ESK4-FF / ESK4-PA, active
(connector X2)

type of protection Intrinsic Safety Ex ia IIC

Maximum values:

$$\begin{aligned}U_o &= 6.6 \text{ V} \\I_o &= 1347 \text{ mA} \\P_o &= 0.5 \text{ W} \\L_o &= 50 \text{ } \mu\text{H} \\C_o &= 3 \text{ } \mu\text{F}\end{aligned}$$

Specific conditions of use

1. The electronic signal output, module types ESK4... , ESK4-I/O, ESK4-FF , ESK4-PA shall be mounted into an enclosure which meets the degree of protection IP20 according to EN 60529 as a minimum.
2. The enclosure of the electronic signal output consists of plastic material which can charge electrostatically. A note in the operating instruction manual and a warning label on the equipment shall point to this risk.
3. For permissible range of the ambient temperature depending on the temperature class, reference is made to the operating instruction manual.