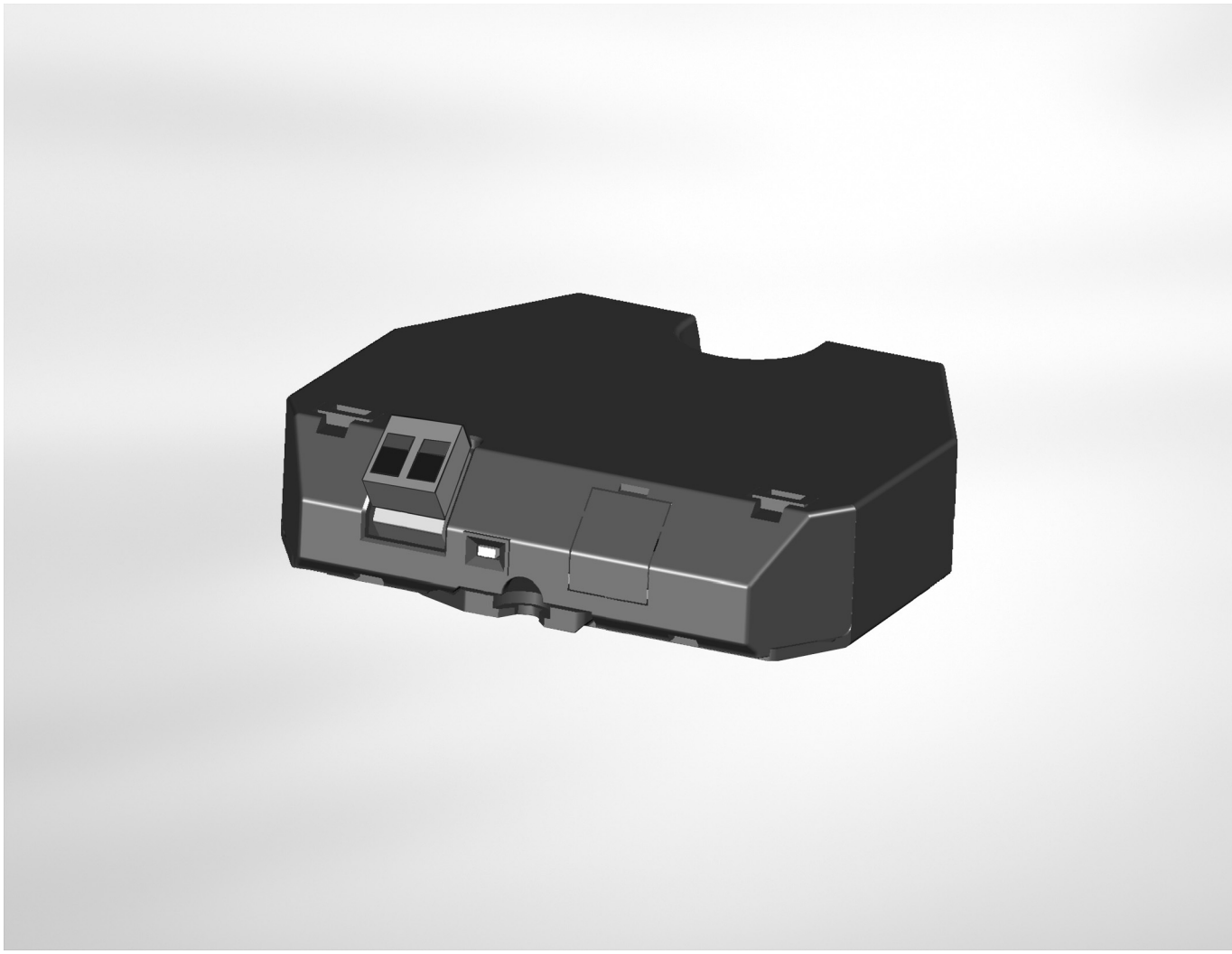


ESK4... ...

Supplementary instructions

Electronic signal output

Equipment category II 2G, EPL Gb

KROHNE

1.1 General notes

These additional instructions apply to explosion-protected versions of the ESK4... electronic signal output with the designation II 2 G. They complete the installation and operation instructions for the non-explosion protected versions.

The information given in these Instructions contains only the data relevant to Category 2 explosion protection. The technical details given in the installation and operation instructions for the non-explosion protected versions apply unchanged unless excluded or superseded by these instructions.

1.2 EC conformity

The manufacturer declares with the EC declaration of conformity on his own responsibility conformity with the protection goals of directive 94/9/EC for use in hazardous areas with gas. Conformity with harmonised standards was checked
in accordance with EN 60079-0:2012 und EN 60079-11:2012.

The EC declaration of conformity is based on the EC type examination certificate of the Physikalisch Technische Bundesanstalt (PTB):

PTB 10 ATEX 2021 X

The "X" after the certificate number refers to special conditions for safe use of the device, which have been listed in these instructions.
If needed the EC type test certificate can be downloaded from the manufacturer's website.

1.3 Safety instructions

Assembly, installation, start-up and maintenance may only be performed by personnel trained in explosion protection!

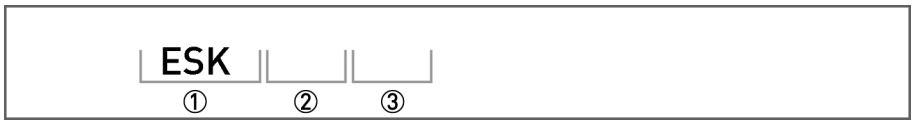
CAUTION!
Should operating conditions and locations require the observance of further standards, guidelines and laws, this is the responsibility of the operator and/or those commissioned by him.

2.1 Device description

ESK4... electronic signal outputs serve to determine the position of magnetic encoders. They are designed for installation in M40 type indicators and are usually used in measuring devices to measure the volume flow and level of flammable and non-flammable gases and liquids.
The analogue current signal (4-20 mA) with superimposed HART® communication signal and optional switching outputs and bus connection modules for connection to the Foundation Fieldbus FF or Profibus PA is available as the output signal.

2.2 Description code

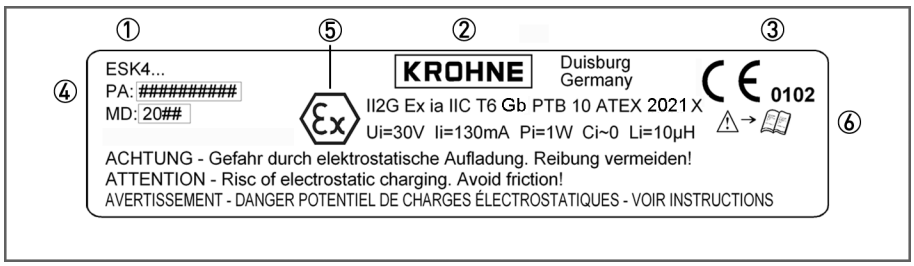
The safety description code * consists of the following elements:



① **E**lectronic **S**ignal output **K**rohne
② Version of the signal output
4 - Analogue signal output 4-20mA with HART signal
4-I/O - Switch output with counter
4-FF - Foundation Fieldbus connection module
4-PA - Profibus PA connection module
③ Marking without influence on the explosion safety protection

2.3 Marking

The marking of the module is on the housing, where the following identification plate can be found.



① Device type
② Manufacturer
③ Notified ATEX body
④ Serial number
⑤ Ex-data acc. to PTB 10 ATEX 2021 X
⑥ Note manual

2.4 Equipment category

The electronic signal outputs are designed in category II 2 G or EPL Gb according to EN 60079-0 and EN 60079-11 for use in zone 1.

2.5 Protection types

The electronic signal output is designed with protection type intrinsic safety, protection level "ia" acc. to EN 60079-11.

The marking acc. to ATEX is: **II 2G Ex ia IIC T6 Gb**

The marking contains the following information:	
II	Explosion protection, group II
2	Equipment category 2
G	Gas explosion protection
Ex ia	Intrinsically safe, level of protection "ia"
IIC	Suitable for gas groups IIC, IIB and IIA
T6	Suitable for temperature classes T6...T1
Gb	EPL, suitable for zone 1

2.6 Ambient temperature / temperature classes

Depending on the version and the temperature class, the electronic signal outputs are approved for the following ambient temperatures.

ESK4... permissible ambient temperatures

Type Signal Output	Temperature class	Ambient temperature in	
		[°C]	[°F]
ESK4 ... ESK4-I/O	T6	-40...+60	-40...+140
	T5	-40...+75	-40...+167
	T4...T1	-40...+85	-40...+185
ESK4-FF ESK4-PA	T6	-40...+55	-40...+131
	T5	-40...+70	-40...+158
	T4...T1	-40...+85	-40...+185

2.7 Electrical data

The connection may only be made using separately certified intrinsically safe isolating amplifiers or zener barriers with the following maximum values per circuit:

ESK4... ... electrical values

Type Signal Output	Terminals	Maximum value per intrinsically safe circuit				
		U_i	I_i	P_i	C_i	L_i
ESK4 ...	11, 12	30 V	130 mA	1 W	0 nF	10 µH
ESK4-I/O	1, 2, 3 or 4, 5, 6 or 7, 8	30 V	130 mA	1 W	10 nF	0 µH
ESK4-FF / ESK4-PA	D, D-	24 V	380 mA	5.32 W	0 nF	0 µH
		FISCO FIELD DEVICE				

The connector behind the cutout on the ESK4... module cover connects internal intrinsically safe circuits. Only certified modules of type ESK4 I/O, ESK4 FF or ESK4 PA may be connected. The additional connector on the ESK 4I/O module connects the optional display as an internal intrinsically safe circuit.

3.1 Installation

Installation and setup must be carried out according to the applicable installation standards (e.g. EN 60079-14) by qualified personnel trained in explosion protection. The information given in the Installation and Operation Instructions and the Supplementary Installation and Operation Instructions must always be observed.

Electronic signal outputs must be installed so that

- There are no external forces acting on the housing.
- The nameplate is clearly visible.
- It can be operated from a location with secure footing.

CAUTION!
The manufacturer is not liable for any damage resulting from improper use or use other than the intended purpose.

3.2 Special conditions

Housing protection

Electronic signal outputs are to be protected against external influences by a housing (min. IP20).

Electrostatic charge

The plastic housing of the electronic signal output may be electrostatically charged. Take appropriate measures to ensure that no charge is applied to the surface of the housing during installation and operation.

ESK4-FF and ESK4-PA connection

When operating the ESK4-FF or ESK4-PA module for connection to intrinsically safe bus systems, the ESK4... module may not be powered separately. The ESK4... module is fed by the flat ribbon cable from the modules ESK4-FF or ESK4-PA.

4.1 General notes

The electrical connection of the intrinsically safe signal circuit with protection level "ia" to the modules ESK4... , ESK4 FF and ESK4 PA is independent of polarity. The connection of the ESK4 I/O module is polarity sensitive. The connection to all modules is made by colour-coded pluggable connection terminals. The colour coding of the terminals must be observed. The permissible maximum values of the separate circuits (electrical data) must be observed.

The connecting cables must be selected according to prevailing installation standards (e.g. EN 60079-14).. The connecting cables must be fixed and laid so they are sufficiently protected against damage.

All cores that are not used must be securely connected to the ground potential of the hazardous area or carefully insulated against each other and against ground (test voltage ≥ 500 V_{eff}).

4.2 Power supply

Electronic signal outputs do not require a separate power supply. The required supply is provided via the 4...20 mA current output or bus-connection.

5.1 Start-up

Start-up is only permitted when the electronic signal output:

- is correctly installed in a housing and connected.
- has been checked for the proper state with regard to its installation and connection requirements.

The user of the system must have it checked before start-up in compliance with the national regulations for checks before startup.

5.2 Operation

The electronic signal output may be parameterized via the HART® communication and the button may be operated during operation.

6.1 Maintenance

Maintenance work of a safety-relevant nature within the meaning of explosion protection may only be carried out by the manufacturer, his authorised representative or under the supervision of authorised inspectors.

For systems in hazardous areas, regular tests are required in order to maintain the proper condition.

The following checks are recommended:

- checking the housing, connection terminals and feed lines for corrosion and/or damage.

Close the housing following any maintenance work on the electronic signal output.

6.2 Dismantling

Replacing the electronic signal output

Due to the modular design of the electronic signal output, it is possible to replace a module with an identical spare part in accordance with safety guidelines.

If at all possible, the meter should be electrically isolated before removing and replacing the indicator. If that is not possible, the basic conditions for intrinsic safety (e.g. no grounding or connection of different intrinsically safe circuits to one another) must be observed during dismantling.

Removal and installation are the responsibility of the operator.

CAUTION!
There may be a loss of measuring accuracy!

KROHNE product overview

- Electromagnetic flowmeters
- Variable area flowmeters
- Ultrasonic flowmeters
- Mass flowmeters
- Vortex flowmeters
- Flow controllers
- Level meters
- Temperature assemblies
- Pressure transmitters
- Analysis products
- Products and systems for the oil & gas industry
- Measuring systems for the marine industry

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