



# Safety instructions

## Conductive probes

### EL1, EL2, EL3, EL5, EL9

IECEX PTB 16.0009 X

Intrinsic safety



Document ID: 28127



# VEGA

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Please note:

These safety instructions are part of the documentation:

- 32651 - EL1
- 11947 - EL2
- 32652 - EL3
- 11947 - EL5
- 11947 - EL9
- 53643 - Certificate of Conformity IECEx PTB 16.0009 X

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## 1 Area of applicability

These safety instructions apply to the conductive probes of type series EL1EX.\*\*\*(\*)\*....EL9EX.\*\*\*(\*)\*.... EL9EX.\*\*\*(\*)\* according to the Certificate of Conformity IECEx PTB 16.0009 X (certification number on the type label).

The document applies only to EL1EX ... EL9EX where the document number (28127) is specified on the type label.

## 2 General information

The electrodes EL1EX.\*\*\*(\*)\*....EL9EX.\*\*\*(\*)\* are transmitters which can be used in conjunction with a signal conditioning instrument for the detection of conductive liquids.

The EL1EX.\*\*\*(\*)\*....EL9EX.\*\*\*(\*)\* are suitable for use in hazardous atmospheres of all combustible materials of explosion group IIA, IIB and IIC for applications requiring instruments of EPL-Ga, EPL-Ga/Gb or EPL-Gb.

If the EL1EX.\*\*\*(\*)\*....EL9EX.\*\*\*(\*)\* are installed and operated in hazardous areas, the general Ex installation regulations IEC 60079-14 as well as these safety instructions must be observed.

The operating instructions as well as the installation regulations or standards that apply for explosion protection of electrical systems must generally be observed.

The installation of explosion-endangered systems must always be carried out by qualified personnel.

### EPL-Ga instrument

The EL1EX.\*\*\*(\*)\*....EL9EX.\*\*\*(\*)\* are installed in hazardous areas requiring a EPL-Ga instrument.

### EPL-Ga/Gb instrument

The electronics housing is installed in hazardous areas requiring instruments of type EPL-Gb. The process connection element is installed in the separating wall, which separates areas requiring instruments of type EPL-Gb or EPL-Ga. The measuring electrode with the mechanical fixing element is installed in hazardous areas requiring instruments of type EPL-Ga.

### EPL-Gb instrument

The EL1EX.\*\*\*(\*)\*....EL9EX.\*\*\*(\*)\* are installed in hazardous areas requiring a EPL-Gb instrument.

### Ignition protection label

Ex ia IIC T6...T1

## 3 Technical data

### Electrical data

#### Ignition protection type intrinsic safety Ex i

Signal circuits: (KL1, KL3, KL4, KL5)

In ignition protection type intrinsic safety Ex ia IIC

Max. values of the intrinsically safe circuits (sum values):

- $U_i \leq 13 \text{ V}$
- $I_i \leq 60 \text{ mA}$
- $P_i \leq 200 \text{ mW}$

The effective internal capacitance  $C_i$  is negligibly small.

The effective internal inductance  $L_i$  is negligibly small.

The intrinsically safe circuits are safety-technically grounded.

## 4 Application conditions

The max. permissible ambient temperatures depending on the temperature classes are specified in the following tables.

EL\*EX.I\*\*\*(\*)\*

### EPL-Ga instrument

Temperature class	Ambient temperature on the sensor	Ambient temperature on the electronics
T6	-20 ... +40 °C	-20 ... +40 °C
T5	-20 ... +52 °C	-20 ... +52 °C
T4	-20 ... +60 °C	-20 ... +60 °C
T3	-20 ... +60 °C	-20 ... +60 °C
T2	-20 ... +60 °C	-20 ... +60 °C
T1	-20 ... +60 °C	-20 ... +60 °C

The conductive electrodes must only be operated in a hazardous area requiring instruments of category 1G, if there are atmospheric conditions (pressure of 0.8 bar to 1.1 bar).

If there is no explosive atmosphere, the permissible operating temperatures and pressures must be taken from the manufacturer specifications (operating instructions).

Sept. 6.4.2 of EN 1127-1 is taken into account with regard to the stated permissible ambient temperatures on the sensor and the sensor housing.

### EPL-Ga/Gb instrument

Temperature class	Ambient temperature on the sensor	Ambient temperature on the electronics
T6	-20 ... +60 °C	-20 ... +56 °C
T5	-20 ... +60 °C	-20 ... +71 °C
T4	-20 ... +60 °C	-20 ... +85 °C
T3	-20 ... +60 °C	-20 ... +85 °C
T2	-20 ... +60 °C	-20 ... +85 °C
T1	-20 ... +60 °C	-20 ... +85 °C

The conductive electrodes may be operated in hazardous areas requiring instruments of category 1/2G only if atmospheric conditions prevail (pressure of 0.8 bar to 1.1 bar).

If there is no explosive atmosphere, the permissible operating temperatures and pressures must be taken from the manufacturer specifications (operating instructions).

### EPL-Gb instrument

Temperature class	Ambient temperature on the sensor	Ambient temperature on the electronics
T6	-50 ... +85 °C	-20 ... +56 °C
T5	-50 ... +100 °C	-20 ... +71 °C
T4	-50 ... +130 °C	-20 ... +85 °C
T3	-50 ... +130 °C	-20 ... +85 °C

Temperature class	Ambient temperature on the sensor	Ambient temperature on the electronics
T2	-50 ... +130 °C	-20 ... +85 °C
T1	-50 ... +130 °C	-20 ... +85 °C

The permissible operating temperatures and pressures are mentioned in the respective manufacturer instructions.

## 5 Protection against static electricity

The electrodes EL1EX.\*\*\*(\*)\*...EL9EX.\*\*\*(\*)\* in the version with electrostatically chargeable parts, such as e.g. plastic housing or sensor insulation, are provided with a caution label on the housing referring to the safety instructions that must be followed if there is a danger of electrostatic charging during mounting, operation and especially maintenance work.



Caution: Plastic parts! Danger of electrostatic charging!

- Avoid friction
- No dry cleaning
- Do not mount in areas with flowing, non-conductive products

## 6 Material resistance

For applications requiring instruments of category 1G or category 1/2G the EL1EX.\*\*\*(\*)\*...EL9EX.\*\*\*(\*)\* must only be used in products against which the wetted materials are sufficiently resistant.

## 7 Use of an overvoltage arrester

When used as category 1G or 1/2G instruments, a suitable overvoltage arrester must be connected as protection against overvoltages in front of the electrodes EL1EX.\*\*\*(\*)\*...EL9EX.\*\*\*(\*)\* according to IEC 60079-14.

## 8 Impact and friction sparks

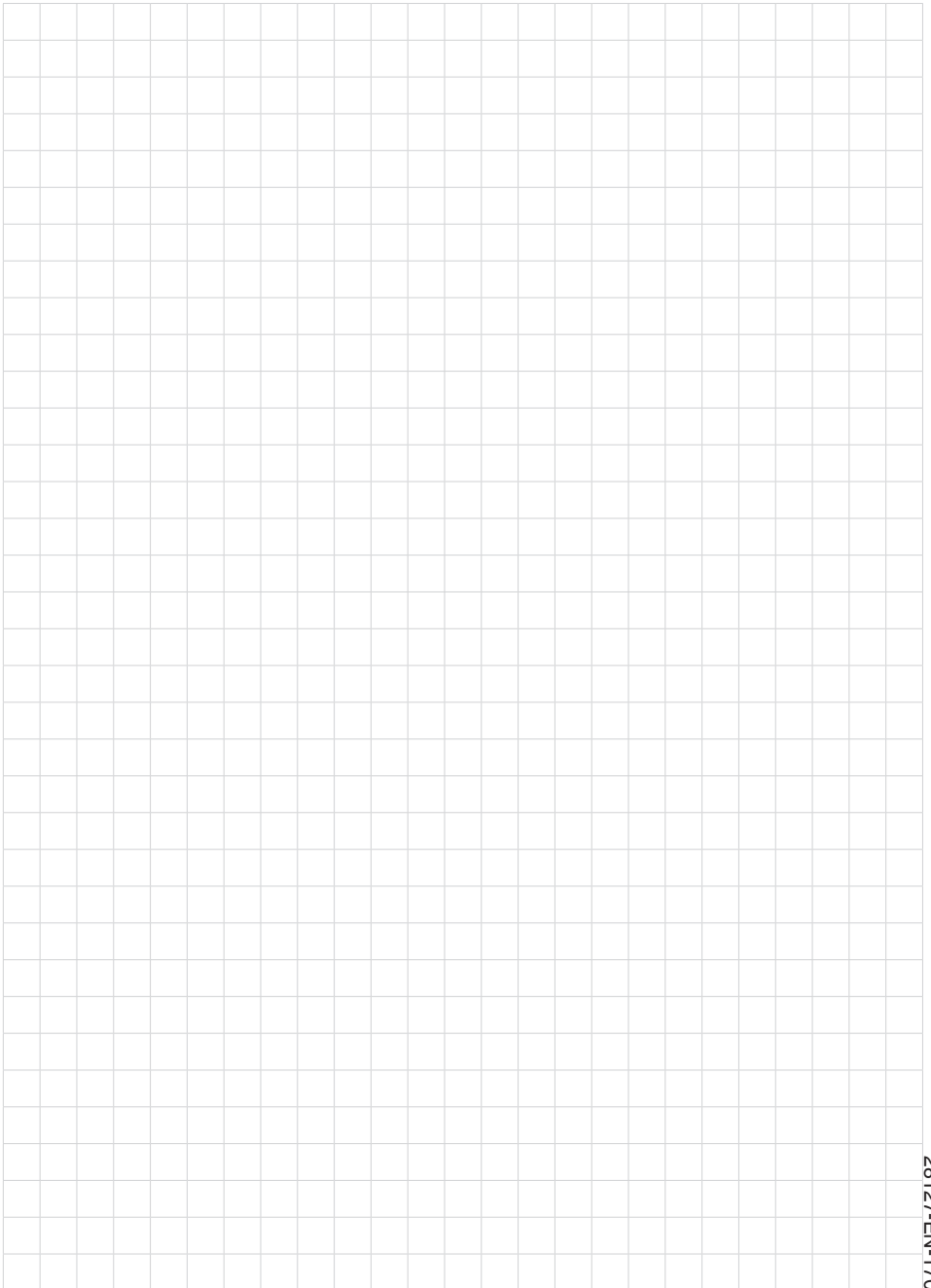
When used as category 1G instruments, the EL1EX.\*\*\*(\*)\*...EL9EX.\*\*\*(\*)\* in aluminium/titanium versions must be mounted in such a way that sparks from impact and friction between aluminium/titanium and steel (except stainless steel, if the presence of rust particles can be excluded) cannot occur.

## 9 Potential equalisation

Since the signal circuit of the conductive electrodes type EL1EX.\*\*\*(\*)\*...EL9EX.\*\*\*(\*)\* is grounded by the medium, there must be potential equalization in the complete range of the intrinsically safe circuit, inside and outside the hazardous area.

## 10 Installation

The conductive electrodes EL1EX.\*\*\*(\*)\*...EL9EX.\*\*\*(\*)\* must be mounted in a way that effectively prevents the sensor from touching the vessel wall, under consideration of other vessel installations and flow conditions. This applies especially to sensor lengths over 3 m.





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All statements concerning scope of delivery, application, practical use and operating conditions of the sensors and processing systems correspond to the information available at the time of printing.

Subject to change without prior notice

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