



**Safety instructions**  
**Conductive probes**  
**EL1, EL2, EL3, EL5, EL9**

PTB 02 ATEX 2214 X

Intrinsic safety



CE 0044



Document ID: 36935



**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
- 36539 - EU type approval certificate PTB 02 ATEX 2214 X

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|    |  |
|----|--|
| DE | Sicherheitshinweise für den Einsatz in explosionsgefährdeten Bereichen, verfügbar in den Sprachen deutsch, englisch, französisch und spanisch.   |
| EN | Safety instructions for the use in hazardous areas are available in German, English, French and Spanish language.  |
| FR | Consignes de sécurité pour l'utilisation en atmosphère explosible, disponibles dans les langues allemande, anglaise, française et espagnole.   |
| ES | Instrucciones de seguridad para el empleo en áreas con riesgo de explosión, disponible en los siguientes idiomas alemán, inglés, francés y español.  |
| CZ | Pokud nastanou potíže při čtení bezpečnostních upozornění v otištěných jazycích, poskytneme. Vám na základě žádosti k dispozici kopii v jazyce Vaší země.  |
| DA | Hvis De har svært ved at forstå sikkerhedsforskrifterne på de trykte sprog, kan De få en kopi på Deres sprog, hvis De ønsker det.  |
| EL | Εάν δυσκολεύεστε να διαβάσετε τις υποδείξεις ασφαλείας στις γλώσσες που ήδη έχουν τυπωθεί, τότε σε περίπτωση ζήτησης μπορούμε να θέσουμε στη διάθεσή σας ένα αντίγραφο αυτών στη γλώσσα της χώρας σας.   |
| ET | Kui teil on raskusi trükitud keeltes ohutusnõuete lugemisega, siis saadame me teie järelpärimise peale nende koopia teie riigi keeles.   |
| FI | Laitteen mukana on erikielisiä turvallisuusohjeita. Voit tilata meiltä äidinkielistet turvallisuusohjeet, jos et selviä mukana olevilla kielillä.  |
| HU | Ha a biztonági előírásokat a kinyomtatott nyelveken nem tudja megfelelően elolvasni, akkor lépjen velünk kapcsolatba: azonnal a rendelkezésére bocsátunk egy példányt az Ön országában használt nyelven. |
| IT | Se le Normative di sicurezza sono stampate in una lingua di difficile comprensione, potete richiederne una copia nella lingua del vostro paese.  |
| LT | Jeį Jums sunku suprasti saugos nuorodų tekstą pateiktomis kalbomis, kreipkitės į mus ir mes Jums duosime kopiją Jūsų šalies kalba.   |
| LV | Ja Jums ir problēmas drošības noteikumus lasīt nodrukātajās valodās, tad mēs Jums sniegsim pēc pieprasījuma kopiju Jūsu valsts valodā.   |
| MT | F'kaz li jkollok xi diffikulta' biex tifhem listruzzjonijiet ta' sigurta' kif ipprovduti, infurmana u ahna nibghatulek kopja billingwa tieghek.  |
| NL | Als u moeite heeft met het lezen van de veiligheidsinstructies in de afgedrukte talen, sturen wij u op aanvraag graag een kopie toe in uw eigen taal.  |
| PL | W przypadku trudności odczytania przepisów bezpieczeństwa pracy w wydrukowanych językach, chętnie udostępnimy Państwu kopię w języku obowiązującym w danym kraju.  |
| PT | Caso tenha dificuldade de ler as instruções de segurança no idioma, no elas foram impressas, poderá solicitar junto a nós uma cópia em seu idioma.   |
| SK | Pokiaľ nastanú problémy pri čítaní bezpečnostných pokynov vo vydaných jazykoch, poskytneme Vám na základe žiadosti k dispozícii kópiu v jazyku Vašej krajiny.  |
| SL | Kadar se pojavijo težave pri branju varnostnih navodil v izdanih jeziki, vam bomo na osnovi zahtevka dali na razpolago kopijo v jeziku vaše države.  |
| SV | Om du har problem att läsa säkerhetsanvisningarna på de här tryckta språken, ställer vi gärna på begäran en kopia på ditt språk till förfogande.   |

## 1 Area of applicability

These safety instructions apply to the conductive probes of type series EL1EX.\*\*\*(\*)\*... EL9EX.\*\*\*(\*)\* according to the EU type approval PTB 02 ATEX 2214 X (certification number on the type label).

The document applies only to EL1EX ... EL9EX where the document number (36935) 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 category 1G, category 1/2G or category 2G.

If the EL1EX.\*\*\*(\*)\*...EL9EX.\*\*\*(\*)\* are installed and operated in hazardous areas, the general Ex installation regulations EN 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.

### Category 1G instruments

The EL1EX.\*\*\*(\*)\*...EL9EX.\*\*\*(\*)\* are installed in hazardous areas requiring an instrument of category 1G.

### Category 1/2G instruments

The electronics housing is installed in hazardous areas requiring instruments of category 2G. The process connection element is installed in the separating wall, which separates areas requiring instruments of category 2G or 1G. The electrodes with the mechanical fixing element are installed in hazardous areas requiring instruments of category 1G.

### Category 2G instruments

The EL1EX.\*\*\*(\*)\*...EL9EX.\*\*\*(\*)\* are installed in hazardous areas requiring an instrument of category 2G.

### Ignition protection label

II 1G, 1/2G, 2G 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):  |
|                                       | <ul style="list-style-type: none"> <li>● <math>U_i \leq 13 \text{ V}</math></li> <li>● <math>I_i \leq 60 \text{ mA}</math></li> <li>● <math>P_i \leq 200 \text{ mW}</math></li> </ul> |
|                                       | 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.X/A\*\*\*(\*)\*

### Category 1G instruments

| 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.

### Category 1/2G instruments

| 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).

### Category 2G instruments

| 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 EN 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.

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