Sicherheitshinweise / Safety Instructions

ATEX / UKEX / IECEx / CSA

VEGAPOINT 21, 23, 31

Staubexplosionsschutz durch Gehäuse "t"

Dust ignition protection by enclosure "t"

Document ID: 62549

- EU-Konformitätserklärung CSANe 20ATEX9075X (Document ID: 62550)
- UK-Type Examination Certificate UL22UKEX2278X (Document ID: 1011917)
- Certificate of Conformity IECEx SIR 20.0011X (Document ID: 62551)
- Certificate of Conformity CSA 22CA80109435 (Document ID: 62552)

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DE Sicherheitshinweise
EN Safety instructions
FR Consignes de sécurité
ES Instrucciones de seguridad

VEGAPOINT 21, 23, 31

Staubexplosionsschutz durch Gehäuse "t"

Transistorausgang PNP/NPN mit IO-Link, Dreileiter

CE 0044

Document ID: 62549

ATEX

Inhaltsverzeichnis

Ergänzende Dokumentation:

- Betriebsanleitungen VEGAPOINT 21, 23, 31
- EU-Baumusterprüfbescheinigung CSANe 20ATEX9075X (Document ID: 62550)
- EU-Konformitätserklärung (Document ID: 61822)

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1 Geltung

Diese Sicherheitshinweise gelten für die Geräte:

- VEGAPOINT 21
- VEGAPOINT 23
- VEGAPOINT 31

Mit den Elektronikausführungen:

- Transistorausgang PNP/NPN mit IO-Link, Dreileiter

Gemäß der EU-Baumusterprüfbescheinigung CSANe 20ATEX9075X (Bescheinigungsnummer auf dem Typschild) und für alle Geräte mit dem Sicherheitshinweis 62549.

Die Zündschutzkennzeichnung sowie die zugrundeliegenden Normenstände können aus der EU-Baumusterprüfbescheinigung entnommen werden.

Normenstände:

- EN 60079-0: 2018, Allgemeine Bestimmungen
- EN 60079-31: 2014, Staubexplosionsschutz durch Gehäuse "t"

Zündschutzkennzeichen:

- Ausführung mit Kunststoff-Gehäusedeckel
  - II 1/2D Ex ta/tb IIIC T_{200}130 °C/T100 °C Da/Db
  - II 2D Ex tb IIIC T120 °C/T100 °C Db
- Ausführung mit Vollmetallgehäuse
  - II 1/2D Ex ta/tb IIIC T_{200}130 °C/T110 °C Da/Db
  - II 2D Ex tb IIIC T120 °C/T110 °C Db

2 Gerätekonfiguration/-eigenschaften

Die detaillierten Gerätekonfigurationen können mit Hilfe der Seriennummersuche auf unserer Homepage abgerufen werden.

Gehen Sie auf "www.vega.com" und geben Sie im Suchfeld die Seriennummer Ihres Gerätes ein.

Alternativ finden Sie alles über Ihr Smartphone:

- VEGA Tools-App aus dem "*Apple App Store*", "*Google Play Store*" oder " *Baidu Store*" herunterladen
- DataMatrix-Code auf dem Typschild des Gerätes scannen oder
- Seriennummer manuell in die App eingeben

3 Allgemeines

VEGAPOINT 21, 23, 31 ist ein Impedanz-Grenzstandsensor zur Grenzstanderfassung.

An der Spitze der Messelektrode wird ein elektrisches Wechselfeld erzeugt. Wird der Sensor mit Medium bedeckt, ändert sich die Impedanz des Sensors. Diese Änderung wird von der Elektronik erfasst und in einen Schaltbefehl umgewandelt.

Eventuell vorhandene Anhaftungen werden bis zu einem bestimmten Grad ignoriert und haben damit keinen Einfluss auf die Messung.

Die VEGAPOINT 21, 23, 31 bestehen aus einem Elektronikgehäuse, einem Prozessanschlusselement und einem Messfühler.

Die VEGAPOINT 21, 23, 31 sind geeignet für den Einsatz in explosionsfähiger Atmosphäre aller brennbaren Stoffe der Explosionsgruppen IIIA, IIIB und IIIC.

Die VEGAPOINT 21, 23, 31 sind für Anwendungen geeignet, die Betriebsmittel der Kategorie 1/2D

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(EPL Da/Db) oder 2D (EPL Db) erfordern.

4 Anwendungsbereich

Kategorie 1/2D (EPL Da/Db-Betriebsmittel)
Das Elektronikgehäuse des VEGAPOINT 21, 23, 31 wird im explosionsgefährdeten Bereich der Zone 21 errichtet, die ein Betriebsmittel der Kategorie 2D (EPL Db) erfordern. Das mechanische Befestigungselement, Prozessanschlusselement wird in der Trennwand errichtet, die die Bereiche voneinander trennt, in denen Betriebsmittel der Kategorie 2D (EPL Db) oder 1D (EPL Da) erforderlich sind. Das Sensormesssystem wird im explosionsgefährdeten Bereich der Zone 20 errichtet, die ein Betriebsmittel der Kategorie 1D (EPL Da) erfordert.

Kategorie 2D (EPL Db-Betriebsmittel)
Die VEGAPOINT 21, 23, 31 mit dem mechanischen Befestigungselement werden im explosionsgefährdeten Bereich der Zone 21 errichtet, die ein Betriebsmittel der Kategorie 2D (EPL Db) erfordern.

5 Besondere Betriebsbedingungen ("X"-Kennzeichnung)

Die nachfolgende Übersicht listet alle besonderen Eigenschaften des VEGAPOINT 21, 23, 31, welche eine Kennzeichnung mit dem Symbol "X" hinter der Zertifikatsnummer erforderlich machen.

Elektrostatische Aufladung (ESD)
Die Details hierzu sind dem Kapitel "*Elektrostatische Aufladung (ESD)*" dieser Sicherheitshinweise zu entnehmen.

Umgebungstemperatur
Die Details hierzu sind dem Kapitel "*Thermische Daten*" dieser Sicherheitshinweise zu entnehmen.

UV-Beständigkeit
Die Sensorspitze des VEGAPOINT 21, 23, 31 muss in eingebautem Zustand vor direkter Sonneneinstrahlung geschützt sein. Der Sensor darf nicht in Prozesse eingebaut werden, in denen mit höherer UV-Strahlung zu rechnen ist.

Den VEGAPOINT 21, 23, 31 nicht ohne angeschlossenen M12-Stecker im Freien oder unter UV-Licht montiert lassen.

Schlagfestigkeit
Der VEGAPOINT 21, 23, 31 ist in der Installation vor Schlageinwirkung zu schützen.

Einsatz in Zone 20/21 (Ex ta/tb)
Der VEGAPOINT 21, 23, 31 ist für eine Teilinstallation in Zone 20 und eine Teilinstallation in Zone 21 vorgesehen, z. B. montiert durch die Wand eines Prozessbehälters oder Silos. Dabei befindet sich die Messspitze bis zum Prozessanschluss in Zone 20, das Gehäuse ab dem Prozessanschluss und die Verkabelung befindet sich in Zone 21.

6 Zusätzliche Hinweise für den sicheren Betrieb

- Der VEGAPOINT 21, 23, 31 ist nach den Anforderungen der geltenden Normen unter üblichen atmosphärischen Bedingungen von 80 kPa (0,8 bar) bis 110 kPa (1,1 bar) geprüft.
- Für Prozessdrücke außerhalb der üblichen atmosphärischen Bedingungen können weitergehende Anforderungen gelten.

Anschlussbedingungen

- Die VEGAPOINT 21, 23, 31 sind grundsätzlich über einen energiebegrenzten Stromkreis nach IEC 61010-1, z. B. über ein Netzteil nach Class 2, zu versorgen

- Dem VEGAPOINT 21, 23, 31 kann bei Bedarf ein geeigneter Überspannungsschutz vorgeschaltet werden

7 Wichtige Hinweise für die Montage und Wartung

Trennen der Spannungsversorgung
Den M12-Stecker nicht vom Gerät trennen, wenn er unter Spannung steht. Die Warnschilder am Gerät weisen auf die Gefahr hin:

- WARNING - DO NOT SEPARATE WHEN ENERGIZED
- AVERTISSEMENT – NE PAS SÉPARER SOUS TENSION

Allgemeine Hinweise
Für die Montage, die elektrische Installation, die Inbetriebnahme und die Wartung des Gerätes müssen folgende Voraussetzungen erfüllt werden:

- Das Personal muss über die Qualifikation entsprechend seiner Funktion und Tätigkeit verfügen
- Das Personal muss im Explosionsschutz ausgebildet sein
- Das Personal muss mit den entsprechenden gültigen Vorschriften vertraut sein, z. B. Projektierung und Errichtung entsprechend der IEC/EN 60079-14
- Bei Arbeiten am Gerät (Montage, Installation, Wartung) ist sicherzustellen, dass keine explosionsfähige Atmosphäre vorhanden ist, wenn möglich, Versorgungsstromkreise spannungslos schalten
- Gerät entsprechend den Herstellerangaben, der EU-Baumusterprüfbescheinigung und entsprechend den gültigen Vorschriften, Regeln und Normen installieren
- Veränderungen am Gerät können den Explosionsschutz und somit die Sicherheit beeinträchtigen, daher ist es nicht zulässig, dass Reparaturen durch den Endverbraucher durchgeführt werden
- Veränderungen dürfen nur durch von der Firma VEGA autorisiertes Personal durchgeführt werden
- Nur zugelassene Ersatzteile verwenden
- Achten Sie bei der Auswahl des M12-Anschlusskabels auf eine Dauergebrauchstemperatur von größer 90 °C

Montage
Bei der Gerätemontage ist zu beachten:

- Mechanische Beschädigungen am Gerät sind zu vermeiden
- Mechanische Reibungen sind zu vermeiden
- Wird das Gerät als Trennwandgerät verwendet, muss der Betreiber die gültigen anwendbaren Installationsvorschriften beachten
- Vor dem Betrieb den elektrischen Anschluss bis zum Anschlag fest verschrauben, um die auf dem Typschild angegebene IP-Schutzart sicher zu stellen. Wir empfehlen die Verwendung eines geeigneten Drehmomentschlüssels mit 3,5 Nm.
- Befestigen Sie die mitgelieferte Schutzhaube am Gerät. Diese dient zum Schutz gegen mechanische Beschädigung durch eventuell eintretende Schlageinwirkung. Zur Montage der Schutzhaube gehen Sie wie folgt vor:
  - Legen Sie die Schutzkappe links (1) oder Schutzkappe rechts (2) an das Gehäuse (4) im Steckerbereich
  - Legen Sie das Anschlusskabel über die obere oder seitliche Aussparung der Kappenhälfte
  - Fügen Sie nun mit der anderen Schutzkappenhälfte die Haube zusammen und verschließen Sie diese mit den beiden Linsenschrauben (3) mit einem Drehmoment von 1,0 Nm

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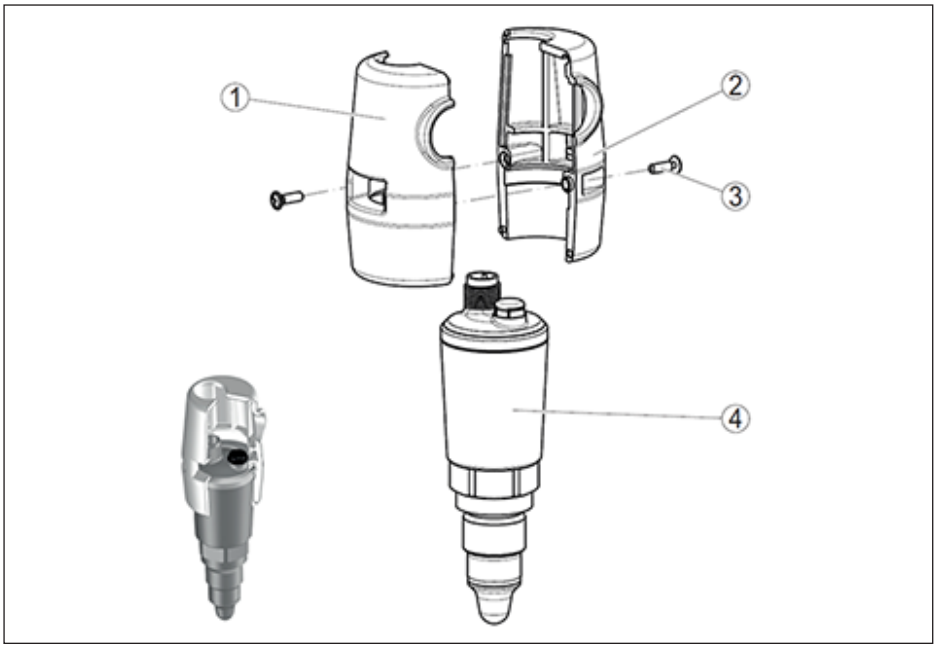

Abb. 1: Anbringen der Schutzhaube

Wartung

Zur Sicherstellung der Funktion des Gerätes wird eine periodische Sichtkontrolle empfohlen auf:

- Sichere Montage
- Keine mechanischen Beschädigungen oder Korrosion
- Durchgescheuerte oder anderweitig beschädigte Leitungen
- Keine lockere Verbindungen der Leitungsanschlüsse, Potenzialausgleichsanschlüsse
- Korrekte und eindeutig gekennzeichnete Leitungsverbindungen

8 Elektrostatische Aufladung (ESD)

Bezüglich der Gefahr elektrostatischer Aufladungen ist zu beachten:

- Reibung an den Oberflächen vermeiden
- Oberflächen nicht trocken reinigen

Die Geräte sind so zu errichten/installieren, dass Folgendes ausgeschlossen werden kann:

- elektrostatische Aufladungen durch Betrieb, Wartung und Reinigung
- prozessbedingte elektrostatische Aufladungen, z. B. durch vorbei strömende Messstoffe

- Für Messstoffe mit einer Leitfähigkeit kleiner 10^{-8} S/m gilt:
  - Das Füllstandmessgerät darf nicht zum Einsatz kommen, wenn stark ladungserzeugende Prozesse vorhanden sind, wie z. B. maschinelle Reib- und Trennprozesse, das Sprühen von Elektronen, usw.
  - Insbesondere darf das Füllstandmessgerät nicht in einen pneumatischen Förderstrom montiert werden

- Bei extrem zündwilligen Stäuben mit einer Mindestzündenergie (MZE) von weniger als 3 mJ, darf das Gerät nicht in Bereichen eingesetzt werden, in denen mit intensiven Aufladungsprozessen zu rechnen ist

9 Potenzialausgleich/Erdung

Die Potenzialausgleichsverbindung des VEGAPOINT 21, 23, 31 geschieht über den Einschraubstutzen. Stellen Sie sicher, dass der Einschraubstutzen in elektrischem Kontakt zur Erde steht. Beispielsweise erreichen Sie dies über die Verbindung des Prozessanschlusses mit einem elektrisch leitenden Tankbehälter, welcher in den örtlichen Potenzialausgleich eingebunden ist.

10 Elektrische Daten

Versorgungs- und Signalstromkreis:	
Pin 1[+], Pin 3[-]	U = 12 … 35 V DC
Pin 2	I_{max} = 250 mA
Pin 4	IO-Link

11 Thermische Daten

VEGAPOINT 21, 23, 31 mit Kunststoff-Gehäusedeckel

Maximale Oberflächentemperatur	**Zulässiger Prozesstemperaturbereich an der Messelektrode in Zone 20 (EPL Da) oder Zone 21 (EPL Db)**	**Zulässiger Umgebungstemperaturbereich am Elektronikgehäuse in Zone 21 (EPL Db)**
T_{200}130 °C/100 °C	-40 … +115 °C	-40 … siehe Temperaturtabelle

Maximale Oberflächentemperatur
Die maximale Oberflächentemperatur von +130 °C ist im Bereich der Sensorspitze auf der Sensorelektronik zu erwarten. Diese Temperatur nimmt zum Bereich des Steckeranschlusses hin ab, auf bis zu max. +100 °C.

Herabsetzen der maximal zulässigen Umgebungstemperatur bei hohen Prozesstemperaturen:
Bei Prozesstemperaturen von -40 °C bis +90 °C können Sie den VEGAPOINT 21, 23, 31 im zulässigen Umgebungstemperaturbereich von -40 °C bis +70 °C betreiben. Liegen höhere Prozesstemperaturen am Gerät an, entnehmen Sie bitte die maximal zulässige Umgebungstemperatur der nachfolgenden Tabelle.

Warnschilder am Prozessanschluss verweisen auf die Temperaturen in diesen Sicherheitshinweisen:

- FOR OTHER WARNINGS AND TEMERATURE RANGES - SEE INSTRUCTIONS
- POUR D'AUTRES AVERTISSEMENTS ET PLAGES DE TEMPÉRATURE - VOIR MODE D'EMPLOI

Temperaturtabelle:

Prozesstemperatur	**Maximal zulässige Umgebungstemperatur**
-40 … +90 °C	+70 °C
≤ 95 °C	+67 °C

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Prozesstemperatur	Maximal zulässige Umgebungstemperatur
≤ 100 °C	+63 °C
≤ 105 °C	+58 °C
≤ 110 °C	+54 °C
≤ 115 °C	+50 °C

VEGAPOINT 21, 23, 31 mit Vollmetallgehäuse

Maximale Oberflächentemperatur	Zulässiger Prozesstemperaturbereich an der Messelektrode in Zone 20 (EPL Da) oder Zone 21 (EPL Db)	Zulässiger Umgebungstemperaturbereich am Elektronikgehäuse in Zone 21 (EPL Db)
T_{200} 130 °C/110 °C	-40 … +110 °C +110 … +115 °C	-40 … +70 °C max. +68 °C

Maximale Oberflächentemperatur
Die maximale Oberflächentemperatur von +130 °C ist im Bereich der Sensorspitze auf der Sensorelektronik zu erwarten. Diese Temperatur nimmt zum Bereich des Steckeranschlusses hin ab, auf bis zu max. +110 °C.

Herabsetzen der maximal zulässigen Umgebungstemperatur bei hohen Prozesstemperaturen:
Bei Prozesstemperaturen von -40 °C bis +110 °C können Sie den VEGAPOINT 21, 23, 31 im zulässigen Umgebungstemperaturbereich von -40 °C bis +70 °C betreiben. Liegen höhere Prozesstemperaturen bis einschließlich +115 °C an, beträgt die maximal zulässige Umgebungstemperatur +68 °C.

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Contents

Supplementary documentation:

- Operating Instructions VEGAPOINT 21, 23, 31
- EU-type approval certificate CSANe 20ATEX9075X (Document ID: 62550)
- EU declaration of conformity (Document ID: 61822)

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1 Area of applicability

These safety instructions apply to the devices:

- VEGAPOINT 21
- VEGAPOINT 23
- VEGAPOINT 31

With the electronics versions:

- Transistor output PNP/NPN with IO-Link, Three-wire

According to EU type approval certificate CSANe 20ATEX9075X (certificate number on the type label) and for all instruments with safety instruction 62549.

The classification as well as the respective standards are stated in the EU type approval certificate.

Standards:

- EN 60079-0: 2018, General Requirements
- EN 60079-31: 2014, Dust ignition protection by enclosure "t"

Type of protection marking:

- Version with plastic housing lid
  - II 1/2D Ex ta/tb IIIC T_{200}130 °C/T100 °C Da/Db
  - II 2D Ex tb IIIC T120 °C/T100 °C Db
- Version with full metal housing
  - II 1/2D Ex ta/tb IIIC T_{200}130 °C/T110 °C Da/Db
  - II 2D Ex tb IIIC T120 °C/T110 °C Db

2 Device configuration/-properties

The detailed device configurations can be retrieved using the serial number search on our homepage.

Move to "www.vega.com" and enter in the search field the serial number of your instrument.

Alternatively, you can find all via your smartphone:

- Download the VEGA Tools app from the "*Apple App Store*", "*Google Play Store*" or "*Baidu Store*"
- Scan the DataMatrix code on the type label of the instrument or
- Enter the serial number manually in the app

3 General information

VEGAPOINT 21, 23, 31 is an impedance point level sensor for point level detection.

An alternating electric field is generated at the tip of the measuring electrode. If the sensor is covered with medium, the impedance of the sensor changes. This change is detected by the electronics and converted into a switching command.

Any buildup is ignored to a certain degree and therefore has no influence on the measurement.

The VEGAPOINT 21, 23, 31 consist of an electronics housing, a process connection element and a sensor.

The VEGAPOINT 21, 23, 31 are suitable for applications in hazardous atmospheres of all combustible materials of explosion groups IIIA, IIIB and IIIC.

The VEGAPOINT 21, 23, 31 are suitable for applications requiring category 1/2D (EPL Da/Db) or 2D (EPL Db) instruments.

4 Application area

Category 1/2D (EPL Da/Db instruments)
The electronics housing of VEGAPOINT 21, 23, 31 is installed in hazardous areas of zone 21 requiring instruments of category 2D (EPL Db). The mechanical fixing element, process connection element is installed in the separating wall, which separates areas requiring instruments of category 2D (EPL Db) or 1D (EPL Da). The sensor measuring system is installed in hazardous areas of zone 20 requiring instruments of category 1D (EPL Da).

Category 2D (EPL Db instruments)
The VEGAPOINT 21, 23, 31 with the mechanical fixing element are installed in hazardous areas of zone 21 requiring category 2D (EPL Db) instruments.

5 Specific conditions of use ("X" identification)

The following overview is listing all special properties of VEGAPOINT 21, 23, 31, which make a labelling with the symbol "X" behind the certificate number necessary.

Electrostatic charging (ESD)
You can find the details in chapter "*Electrostatic charging (ESD)*" of these safety instructions.

Ambient temperature
You can find the details in chapter "*Thermal data*" of these safety instructions.

UV resistance
The sensor tip of the VEGAPOINT 21, 23, 31 must be protected from direct sunlight when installed. The sensor must not be installed in processes in which higher UV radiation is to be expected.

Do not leave the VEGAPOINT 21, 23, 31 mounted outdoors or under UV light without the M12 plug connected.

Impact resistance
The VEGAPOINT 21, 23, 31 must be protected against impact during installation.

Use in Zone 20/21 (Ex ta/tb)
The VEGAPOINT 21, 23, 31 is intended for a partial installation in zone 20 and a partial installation in zone 21, e.g. mounted through the wall of a process vessel or silo. The measuring tip is located in zone 20 up to the process fitting, the housing from the process fitting and the cabling is located in zone 21.

6 Additional instructions for safe operation

- The VEGAPOINT 21, 23, 31 is tested according to the requirements of the applicable standards under normal atmospheric conditions from 80 kPa (0.8 bar) to 110 kPa (1.1 bar).
- Further requirements may apply for process pressures outside the usual atmospheric conditions.

Connection conditions
- The VEGAPOINT 21, 23, 31 must always be supplied via an energy-limited circuit according to IEC 61010-1, e.g. via a Class 2 power supply unit
- If necessary, a suitable overvoltage arrester can be connected in front of the VEGAPOINT 21, 23, 31

7 Important information for mounting and maintenance

Separation of the voltage supply
Do not disconnect the M12 connector from the device when it is under voltage. The warning signs

on the device indicate the danger:

- WARNING - DO NOT SEPARATE WHEN ENERGIZED
- AVERTISSEMENT – NE PAS SÉPARER SOUS TENSION

General instructions

The following requirements must be fulfilled for mounting, electrical installation, setup and maintenance of the instrument:

- The staff must be qualified according the respective tasks
- The staff must be trained in explosion protection
- The staff must be familiar with the respectively valid regulations, e.g. planning and installation acc. to IEC/EN 60079-14
- Make sure when working on the instrument (mounting, installation, maintenance) that there is no explosive atmosphere present, the supply circuits should be voltage-free, if possible.
- The instrument has to be mounted according to the manufacturer specifications, the EU type approval certificate and the valid regulations and standards
- Modifications on the instrument can influence the explosion protection and hence the safety, therefore repairs are not permitted to be conducted by the end user
- Modifications must only be carried out by employees authorized by VEGA company
- Use only approved spare parts
- When selecting the M12 connection cable, ensure that the continuous operating temperature exceeds 90 °C

Mounting

Keep in mind for instrument mounting

- Mechanical damage on the instrument must be avoided
- Mechanical friction must be avoided
- If the device is used as a separating wall device, the operator must observe the applicable installation regulations.
- Before operation, screw the electrical connection tightly up to the stop to ensure the IP protection class indicated on the type plate. We recommend using a suitable torque spanner with 3.5 Nm.
- Attach the supplied protective cover to the unit. This serves to protect the unit against mechanical damage caused by possible impact. Proceed as follows to mount the protective cover:
  - Place the protective cap on the left (1) or protective cap on the right (2) on the housing (4) in the connector area
  - Place the connection cable over the top or side recess of the cap half
  - Now join the cover with the other half of the protective cap and close it with the two pan-head screws (3) with a torque of 1.0 Nm

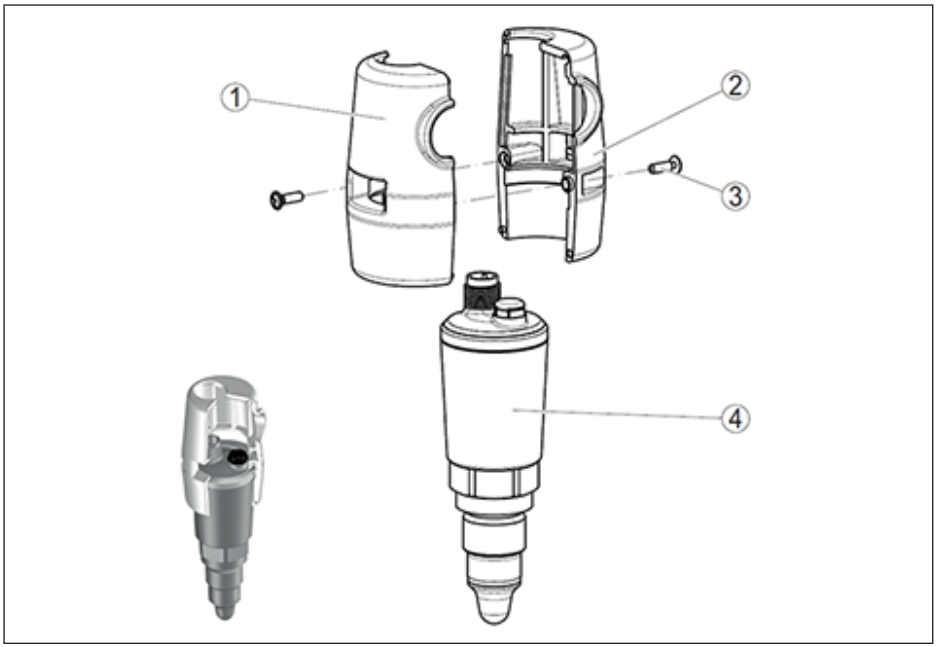

Abb. 2: Attaching the protective cover

Maintenance

To ensure the functionality of the device, periodic visual inspection is recommended for:

- Secure mounting
- No mechanical damages or corrosion
- Worn or otherwise damaged cables
- No loose connections of the line connections, equipotential bonding connections
- Correct and clearly marked cable connections

8 Electrostatic charging (ESD)

Take note in case of danger of electrostatic charges:

- Avoid friction on the surfaces
- Do not dry clean the surfaces

The instruments must be mounted/installed in such a way that the following can be ruled out:

- electrostatic charges during operation, maintenance and cleaning.
- process-related electrostatic charges, e.g. by measuring media flowing past

- For media with a conductivity smaller than 10^{-8} S/m applies:
  - The level measuring instrument must not be used in highly charge generating processes, e.g. mechanical friction and separation processes, spraying of electrons, etc.
  - In particular, the level measuring instrument must not be mounted in a pneumatic conveying flow

- In the case of extremely flammable dusts with a minimum ignition energy (MIE) of less than 3 mJ, the device must not be used in areas where intensive electrostatic charging processes can be expected

9 Potential equalization/Grounding

The potential equalisation connection of the VEGAPOINT 21, 23, 31 is made via the mounting boss. Make sure that the mounting boss is in electrical contact with ground. For example, this can be achieved by connecting the process fitting to an electrically conductive tank container which is integrated into the local potential equalisation.

10 Electrical data

Supply and signal circuit:	
Pin 1[+], Pin 3[-]	U = 12 … 35 V DC
Pin 2	I_{max} = 250 mA
Pin 4	IO-Link

11 Thermal data

VEGAPOINT 21, 23, 31 with plastic housing lid

Max. surface temperature	**Permissible process temperature range at the measuring electrode in zone 20 (EPL Da) or zone 21 (EPL Db)**	**Permissible ambient temperature range on the electronics housing in zone 21 (EPL Db)**
T_{200}130 °C/100 °C	-40 … +115 °C	-40 … see temperature table

Max. surface temperature
The maximum surface temperature of +130 °C can be expected in the area of the sensor tip on the sensor electronics. This temperature decreases towards the area of the plug connection, up to a maximum of +100 °C.

Reduction of the maximum permissible ambient temperature at high process temperatures:
For process temperatures from -40 °C to +90 °C you can operate the VEGAPOINT 21, 23, 31 in the permissible ambient temperature range from -40 °C to +70 °C. If higher process temperatures are present on the device, please refer to the following table for the maximum permissible ambient temperature.

Warning labels on the process fitting refer to the temperatures in these safety instructions:

- FOR OTHER WARNINGS AND TEMERATURE RANGES - SEE INSTRUCTIONS
- POUR D'AUTRES AVERTISSEMENTS ET PLAGES DE TEMPÉRATURE - VOIR MODE D'EMPLOI

Temperature table:

Process temperature	**Max. permissible ambient temperature**
-40 … +90 °C	+70 °C
≤ 95 °C	+67 °C
≤ 100 °C	+63 °C

62549-01-211019

Process temperature	Max. permissible ambient temperature
≤ 105 °C	+58 °C
≤ 110 °C	+54 °C
≤ 115 °C	+50 °C

VEGAPOINT 21, 23, 31 with full metal housing

Max. surface temperature	Permissible process temperature range at the measuring electrode in zone 20 (EPL Da) or zone 21 (EPL Db)	Permissible ambient temperature range on the electronics housing in zone 21 (EPL Db)
T_{200}130 °C/110 °C	-40 … +110 °C +110 … +115 °C	-40 … +70 °C max. +68 °C

Max. surface temperature
The maximum surface temperature of +130 °C can be expected in the area of the sensor tip on the sensor electronics. This temperature decreases towards the area of the plug connection, up to a maximum of +110 °C.

Reduction of the maximum permissible ambient temperature at high process temperatures:
For process temperatures from -40 °C to +110 °C you can operate the VEGAPOINT 21, 23, 31 in the permissible ambient temperature range from -40 °C to +70 °C. If higher process temperatures up to and including +115 °C are present, the maximum permissible ambient temperature is +68 °C.

Warning labels on the process fitting refer to the temperatures in these safety instructions:

- FOR OTHER WARNINGS AND TEMERATURE RANGES - SEE INSTRUCTIONS
- POUR D'AUTRES AVERTISSEMENTS ET PLAGES DE TEMPÉRATURE - VOIR MODE D'EMPLOI

Table des matières

Documentation complémentaire:

- Notices de mise en service VEGAPOINT 21, 23, 31
- Certificat de contrôle UE de type CSANe 20ATEX9075X (Document ID: 62550)
- Déclaration de conformité UE (ID du document : 61822)

Date de rédaction :2021-05-18

62549-01-211019

DE	Sicherheitshinweise für den Einsatz in explosionsgefährdeten Bereichen
EN	Safety instructions for the use in hazardous areas
FR	Consignes de sécurité pour une application en atmosphères explosibles
IT	Normative di sicurezza per l'impiego in luoghi con pericolo di esplosione
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1 Validité

Les présentes consignes de sécurité concernent les appareils suivants :

- VEGAPOINT 21
- VEGAPOINT 23
- VEGAPOINT 31

Avec les versions électroniques :

- Sortie transistor PNP/NPN avec IO-Link, Trois fils

Conformément au certificat de contrôle de type UE CSANe 20ATEX9075X (numéro du certificat sur la plaque signalétique) et pour tous les appareils portant le numéro de la consigne de sécurité 62549.

L'identification de protection contre l'inflammation ainsi que les états normalisés sur lesquels elle se fonde figurent dans le certification de contrôle de type UE.

États normalisés :

- EN 60079-0: 2018, dispositions générales
- EN 60079-31: 2014, Protection contre les explosions de poussière par le boîtier "t"

Mode de protection :

- Version avec couvercle de boîtier en plastique
  - II 1/2D Ex ta/tb IIIC T_{200}130 °C/T100 °C Da/Db
  - II 2D Ex tb IIIC T120 °C/T100 °C Db
- Version avec boîtier totalement métallique
  - II 1/2D Ex ta/tb IIIC T_{200}130 °C/T110 °C Da/Db
  - II 2D Ex tb IIIC T120 °C/T110 °C Db

2 Configuration / propriétés des appareils

Vous pouvez consulter la configuration détaillée de l'appareil au moyen de la recherche de numéros de série sur notre page d'accueil.

Rendez-vous sur "www.vega.com" et indiquez dans la zone de recherche le numéro de série de votre appareil.

Vous trouverez en alternative tout sur votre smartphone :

- Télécharger l'application VEGA Tools depuis l'"*Apple App Store*", le "*Google Play Store*" ou le "*Baidu Store*"
- Numériser le code DataMatrix situé sur la plaque signalétique de l'appareil ou
- Entrer le numéro de série manuellement dans l'application

3 Généralités

VEGAPOINT 21, 23, 31 est un détecteur de niveau à impédance pour la détection de niveau.

Un champ alternatif est généré à la pointe de l'électrode de mesure. Si le capteur est recouvert de produit, sa impédance change. Cette modification est détectée par l'électronique et convertie en un ordre de commutation.

Les éventuels colmatages sont ignorés jusqu'à un certain degré et n'affectent pas la mesure.

Les VEGAPOINT 21, 23, 31 sont composés d'un boîtier de l'électronique, d'un élément de raccord process et d'une sonde de mesure.

Les VEGAPOINT 21, 23, 31 sont appropriés pour l'utilisation dans des atmosphères explosives de toutes les matières inflammables des groupes d'explosion IIIA, IIIB et IIIC.

Les VEGAPOINT 21, 23, 31 sont appropriés pour les applications nécessitant un matériel de la catégorie 1/2D (EPL Da/Db) ou 2D (EPL Db).

4 Domaine d'application

Catégorie 1/2D (matériels EPL Da/Db)
Le boîtier électronique du VEGAPOINT 21, 23, 31 est installé dans une zone explosible de niveau 21 qui requiert un matériel de la catégorie 2D (EPL Db). L'élément de fixation mécanique, l'élément de raccord process, est installé dans la paroi de séparation qui sépare les unes des autres les zones qui nécessitent un matériel de la catégorie 2D (EPL Db) ou 1D (EPL Da). Le système de mesure du capteur est installé dans la zone explosible de niveau 20 qui requiert un matériel de la catégorie 1D (EPL Da).

Catégorie 2D (matériels EPL Db)
Les VEGAPOINT 21, 23, 31 avec élément de fixation mécanique sont installés dans l'atmosphère explosible de la zone 21 nécessitant un matériel de la catégorie 2D (matériel EPL Db).

5 Conditions d'utilisation particulières (caractérisation "X")

L'aperçu ci-après liste toutes les caractéristiques spécifiques au VEGAPOINT 21, 23, 31 nécessitant une caractérisation par le symbole "X" après le numéro de certificat.

Charge électrostatique (ESD)
Les détails à cet effet sont indiqués au chapitre "*Charge électrostatique*" des présentes consignes de sécurité.

Température ambiante
Les détails sont indiqués au chapitre "*Caractéristiques thermiques*" des présentes consignes de sécurité.

Résistance aux UV
En état monté, la pointe du capteur du VEGAPOINT 21, 23, 31 doit être protégée contre le rayonnement solaire direct. LE capteur ne doit pas être monté dans les process dans lesquels il faut s'attendre à un rayonnement UV important.

Ne pas laisser le VEGAPOINT 21, 23, 31 à l'extérieur sans connecteur M12 raccordé, ni le laisser monté sous de la lumière UV.

Résistance aux chocs
Le VEGAPOINT 21, 23, 31 doit être protégé contre les chocs dans l'installation.

Mise en œuvre en zone 20/21 (Ex ta/tb)
Le VEGAPOINT 21, 23, 31 est prévu pour une installation partielle en zone 20 et une installation partielle en zone 21, par ex. monté à travers la paroi d'une cuve process ou de silos. Dans ce cadre, la pointe de mesure se trouve jusqu'au raccord process en zone 20, le boîtier à partir du raccord process et le câblage se trouvent dans la zone 21.

6 Remarques supplémentaires pour une exploitation sure

- Le VEGAPOINT 21, 23, 31 est contrôlé selon les exigences des normes en vigueur dans des conditions atmosphériques normales de 80 kPa (0,8 bar) à 110 kPa (1,1 bar).
- Pour les pressions process hors des conditions atmosphériques normales, des exigences plus strictes peuvent s'appliquer.

Conditions de raccordement

- Fondamentalement, l'alimentation des VEGAPOINT 21, 23, 31 doit se faire via un circuit courant limité en énergie selon CEI 61010-1, par exemple via un bloc d'alimentation selon la classe 2
- Si besoin est, une protection appropriée contre les surtensions peut être installée en amont du VEGAPOINT 21, 23, 31

7 Instructions importantes pour le montage et l'entretien

Débranchement de l'alimentation tension

Ne pas débrancher le connecteur M12 de l'appareil lorsqu'il est sous tension. Les panneaux d'avertissement sur l'appareil indiquent un danger :

- WARNING - DO NOT SEPARATE WHEN ENERGIZED
- AVERTISSEMENT – NE PAS SÉPARER SOUS TENSION

Remarques générales

Pour le montage, l'installation électrique, la mise en service et l'entretien de l'appareil, les conditions suivantes doivent être réunies :

- Le personnel doit disposer des qualifications correspondant à ses fonctions et activités
- Le personnel doit être formé à la protection contre les explosions
- Le personnel doit être familier des dispositions en vigueur, par ex. sur la conception, sélection et construction d'installations électriques selon la norme CEI/EN 60079-14
- Lors des opérations sur l'appareil (montage, installation, entretien), il est impératif de s'assurer de l'absence totale d'atmosphère explosible, et si possible mettre les circuits électriques d'alimentation hors tension.
- Installer l'appareil conformément aux indications du fabricant, au certificat de contrôle de type UE et aux réglementations en vigueur.
- Les modifications de l'appareil peuvent affecter la protection anti-déflagrante et ainsi la sécurité, il n'est donc pas autorisé que les réparations soient effectuées par l'utilisateur final
- Le personnel de la Société VEGA est le seul habilité à procéder à des modifications
- Utiliser uniquement des pièces de rechange homologuées
- Lors de la sélection du câble de raccordement M12, tenez compte d'une température d'utilisation continue supérieure à 90 °C

Montage

Lors du montage de l'appareil, respecter les consignes suivantes :

- Éviter les dommages mécaniques à l'appareil
- Éviter les frottements mécaniques
- Si l'appareil est utilisé en montage sur paroi séparatrice, l'exploitant a l'obligation de respecter les consignes d'installation applicables en vigueur.
- Avant le fonctionnement, visser fermement le raccordement électrique jusqu'à la butée pour assurer l'indice de protection IP indiqué sur la plaque signalétique. Nous recommandons d'utiliser une clé dynamométrique appropriée avec 3,5 Nm.
- Fixer le capot de protection fourni sur l'appareil. Il est destiné à la protection contre l'endommagement mécanique sous l'action d'un choc se produisant éventuellement. Procédez de la manière suivante pour le montage du capot de protection :
  - Posez le capuchon de protection gauche (1) ou le capuchon de protection droit (2) sur le boîtier (4) dans la zone du connecteur
  - Passez le câble de raccordement par l'évidement supérieur ou latérale des demi-capuchons
  - Assemblez maintenant le capot avec l'autre demi-capuchon de protection et refermez celle-ci avec les deux vis à tête bombée (3) avec un couple de 1,0 Nm

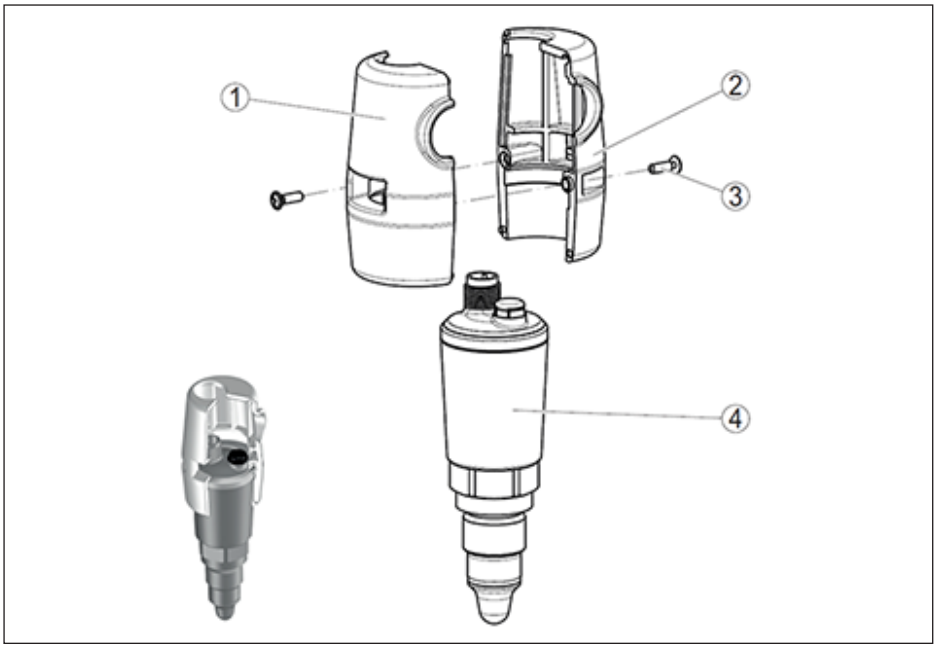

Abb. 3: Mise en place du capot de protection

Maintenance

Pour garantir le fonctionnement de l'appareil, un contrôle visuel périodique est recommandé concernant :

- Fiabilité du montage
- Aucune détérioration mécanique ou corrosion
- Câbles usés ou autrement détériorés
- Aucune connexion lâche des raccordements de conduite, raccordements de compensation de potentiel
- Connexions de câbles correctes et clairement marquées

8 Charge électrostatique (ESD)

À respecter en matière de risques électrostatiques :

- éviter les frottements sur les surfaces
- ne pas nettoyer les surfaces à sec

Installer les appareils de manière à pouvoir exclure les problèmes suivants :

- charges électrostatiques lors du fonctionnement, de la maintenance et du nettoyage
- charges électrostatiques causées par le process, par ex. par le flux des produits à mesurer

- Ce qui suit s'applique aux produits mesurés avec une conductivité inférieure à 10^{-8} S/m :
  - Le détecteur de niveau ne doit pas être utilisé en présence de process générant de fortes charges comme par ex. les process de friction ou de tronçonnage à la machine, la pulvérisation d'électrodes, etc.
  - Il est en particulier interdit de monter le détecteur de niveau dans un flux pneumatique.

- Avec des poussières extrêmement inflammables avec une énergie d'allumage minimale (MZE) de moins de 3 mJ, il est interdit d'utiliser l'appareil dans des zones dans lesquelles on doit s'attendre à des processus de charge intensifs

9 Compensation du potentiel/mise à la terre

La connexion de compensation de potentiel du VEGAPOINT 21, 23, 31 est effectuée au moyen des raccords à visser. Assurez que le raccord à visser est en contact électrique avec la terre. Cela est réalisé par exemple via la connexion du raccord process avec une cuve conduisant l'électricité qui est intégrée dans la compensation du potentiel locale.

10 Caractéristiques électriques

Circuit d'alimentation et signal :	
Pin 1[+], Pin 3[-]	U = 12 … 35 V DC
Pin 2	I_{max} = 250 mA
Pin 4	IO-Link

11 Caractéristiques thermiques

VEGAPOINT 21, 23, 31avec couvercle de boîtier en caoutchouc

Température maximale de la surface	**Plage de température process admissible sur l'électrode de mesure dans la zone 20 (EPL Da) ou la zone 21 (EPL Db)**	**Plage de température ambiante admissible sur le boîtier de l'électronique en zone 21 (EPL Db)**
T_{200}130 °C/100 °C	-40 … +115 °C	-40 … voir le tableau de température

Température maximale de la surface
La température de surface maximale à attendre est de +130 °Cm, dans la zone de la pointe du capteur sur l'électronique du capteur. Cette température diminue dans la zone du raccord du connecteur, jusqu'à max. +100 °C.

Abaissement de la température ambiante admissible maximale en cas de températures process élevées :
En cas de températures process de -40 °C à +90 °C, vous pouvez exploiter le VEGAPOINT 21, 23, 31 dans une plage de température ambiante admissible de -40 °C à +70 °C. Si des températures process élevées règnent sur l'appareil, veuillez consulter la température ambiante maximale admissible dans le tableau suivant.

Des panneaux d'avertissement sur le raccord process renvoient aux températures dans les présentes consignes de sécurité :

- FOR OTHER WARNINGS AND TEMERATURE RANGES - SEE INSTRUCTIONS
- POUR D'AUTRES AVERTISSEMENTS ET PLAGES DE TEMPÉRATURE - VOIR MODE D'EMPLOI

Tableau de températures :

Température process	**Température ambiante maximale tolérée**
-40 … +90 °C	+70 °C
≤ 95 °C	+67 °C

Température process	Température ambiante maximale tolérée
≤ 100 °C	+63 °C
≤ 105 °C	+58 °C
≤ 110 °C	+54 °C
≤ 115 °C	+50 °C

VEGAPOINT 21, 23, 31avec boîtier complètement en métal

Température maximale de la surface	Plage de température process admissible sur l'électrode de mesure dans la zone 20 (EPL Da) ou la zone 21 (EPL Db)	Plage de température ambiante admissible sur le boîtier de l'électronique en zone 21 (EPL Db)
T_{200}130 °C/110 °C	-40 … +110 °C +110 … +115 °C	-40 … +70 °C max. +68 °C

Température maximale de la surface
La température de surface maximale à attendre est de +130 °Cm, dans la zone de la pointe du capteur sur l'électronique du capteur. Cette température diminue dans la zone du raccord du connecteur, jusqu'à max. +110 °C.

Abaissement de la température ambiante admissible maximale en cas de températures process élevées :
Avec des températures process de -40 °C à +110 °C, vous pouvez exploiter le VEGAPOINT 21, 23, 31 dans la plage de température ambiante admissible de -40 °C à +70 °C. En cas de températures process jusqu'à +115 °C inclus, la température maximale admissible est de +68 °C.

Des panneaux d'avertissement sur le raccord process renvoient aux températures dans les présentes consignes de sécurité :

- FOR OTHER WARNINGS AND TEMERATURE RANGES - SEE INSTRUCTIONS
- POUR D'AUTRES AVERTISSEMENTS ET PLAGES DE TEMPÉRATURE - VOIR MODE D'EMPLOI

Índice

Documentación adicional:

- Manuales de instrucciones VEGAPOINT 21, 23, 31
- Certificado de control de tipos CSANe 20ATEX9075X (Document ID: 62550)
- Declaración de conformidad EU (Document ID: 61822)

Estado de redacción: 2021-05-18

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1 Vigencia

Las presentes instrucciones de seguridad son validas para los equipos:

- VEGAPOINT 21
- VEGAPOINT 23
- VEGAPOINT 31

Con las versiones electrónicas:

- Salida de transistor PNP/NPN con IO-Link, tres hilos

Según el certificado de examen de tipo CSANe 20ATEX9075X (Número de certificación en la placa de tipos) y para todos los instrumentos con la instrucción de seguridad 62549.

La etiqueta de protección contra ignición, así como los estados de las normas correspondientes se pueden tomar del certificado de examen de tipo UE.

Estados normalizados

- EN 60079-0: 2018, 1. Disposiciones generales
- EN 60079-31: 2014, Protección contra la explosión de polvo a través de la carcasa "t"

Símbolo de protección e:

- Versión con tapa de carcasa de plástico
  - II 1/2D Ex ta/tb IIIC T_{200}130 °C/T100 °C Da/Db
  - II 2D Ex tb IIIC T120 °C/T100 °C Db
- Versión con carcasa metálica completa
  - II 1/2D Ex ta/tb IIIC T_{200}130 °C/T110 °C Da/Db
  - II 2D Ex tb IIIC T120 °C/T110 °C Db

2 Configuración/propiedades del equipo

Las configuraciones detalladas de los equipos se pueden consultar con ayuda de la búsqueda de números de serie en nuestra página web.

Vaya a "www.vega.com" e introduzca el número de serie de su dispositivo en el campo de búsqueda.

Opcionalmente, también podrá encontrar todo lo relacionado con su smartphone:

- Descargar las aplicaciones VEGA Tools desde "*Apple App Store*", "*Google Play Store*" o "*Baidu Store*"
- Escanear DataMatrix-Code de la placa de tipos del instrumento o
- Entrar el número de serie manualmente en el App

3 Informaciones generales

VEGAPOINT 21, 23, 31 es un sensor de nivel de impedancia para la detección de nivel.

En la punta del electrodo de medición se genera un campo eléctrico alterno. Si el sensor se cubre de producto se modifica la impedancia del sensor. Este cambio es detectado por la electrónica y convertido en una orden de conmutación.

Las adherencias eventuales existentes se ignoran hasta cierto punto y por lo tanto no afectan la medición.

Los VEGAPOINT 21, 23, 31 se componen de una carcasa para la electrónica, un elemento de conexión a proceso y un sensor de medición.

Los VEGAPOINT 21, 23, 31 son apropiados para el empleo en una atmósfera explosiva de todas las sustancias inflamables de los grupos de explosión IIIA, IIIB y IIIC.

Los VEGAPOINT 21, 23, 31 son apropiados para aplicaciones que requieren medios de producción de la categoría 1/2D (EPL Da/Db) o 2D (EPL Db).

4 Campo de aplicación

Categoría 1/2D (Instrumentos EPL Da/Db)
La carcasa de la electrónica del VEGAPOINT 21, 23, 31 se instala en la zona peligrosa de la zona 21, que requiere equipos de la categoría 2D (EPL Db). El elemento de fijación mecánico, elemento de conexión a proceso se instala en la pared de separación, que divide las áreas en las que se requieren equipos categoría 2D (EPL Db) o 1D (EPL Da). El sistema de medición del sensor se instala en la zona explosiva de la zona 20, que requiere un equipo de categoría 1D (EPL Da).

Categoría 2D (Instrumentos EPL Db)
Los VEGAPOINT 21, 23, 31 con el elemento de fijación mecánica se instalan en el área con riesgo de explosión de la zona 21 que requieren un medio de producción de la categoría 2D (EPL Db).

5 Condiciones de operación especiales (Identificación "X")

La siguiente tabla muestra todas las propiedades especiales del VEGAPOINT 21, 23, 31 que requieren una marca con el símbolo "X" después del número de certificado.

Carga electrostática (ESD)
Para detalles al respecto, consultar el capítulo "*Carga electrostática (ESD)*" de estas instrucciones de seguridad.

Temperatura ambiente
Los detalles se pueden encontrar en el capítulo "*Datos térmicos*" de estas instrucciones de seguridad.

Resistente a los rayos UV
Durante la instalación, la punta del sensor del VEGAPOINT 21, 23, 31 debe estar protegida de la luz solar directa. El sensor no debe instalarse en procesos donde se espere mayor radiación UV.

No deje el VEGAPOINT 21, 23, 31 montado a la intemperie o bajo luz ultravioleta sin el conector M12 conectado.

Resistencia a los golpes
Hay que proteger el VEGAPOINT 21, 23, 31 contra los impactos durante la instalación.

Uso en zona 20/21 (Ex ta/tb)
El VEGAPOINT 21, 23, 31 está previsto para una instalación parcial en la zona 20 y una instalación parcial en la zona 21, por ejemplo, montado a través de la pared de un recipiente o silo de proceso. En este caso la punta de medición hasta la conexión de proceso está en la zona 20, la carcasa desde la conexión de proceso y el cableado está en la zona 21.

6 Información adicional para un funcionamiento seguro

- El VEGAPOINT 21, 23, 31 está probado según los requisitos de las normas aplicables en condiciones atmosféricas normales desde 80 kPa (0,8 bar) hasta 110 kPa (1,1 bar).
- Para las presiones de proceso fuera de las condiciones atmosféricas normales se pueden aplicar otros requisitos.

Condiciones de conexión

- La alimentación del VEGAPOINT 21, 23, 31 debe realizarse siempre a través de un circuito de energía limitada según IEC 61010-1, por ejemplo, a través de una fuente de alimentación de clase 2.

- En caso necesario se puede conectar una protección contra sobretensiones adecuada previa al VEGAPOINT 21, 23, 31

7 Indicaciones importantes para el montaje y mantenimiento

Desconexión de la alimentación de tensión
No desconecte el conector M12 del equipo cuando esté encendido. Las señales de peligro del equipo indican el peligro:

- WARNING - DO NOT SEPARATE WHEN ENERGIZED
- AVERTISSEMENT – NE PAS SÉPARER SOUS TENSION

Instrucciones generales
Para el montaje, la instalación eléctrica, la puesta en marcha y el mantenimiento del instrumento hay cumplir los requisitos siguientes:

- El personal debe tener las calificaciones de acuerdo a su función y actividad
- El personal tiene que estar entrenado en la protección contra explosión
- El personal debe estar familiarizado con la normativa vigente, por ejemplo, planificación y construcción de acuerdo con la norma IEC/EN 60079-14
- Cuando trabaje en el dispositivo (instalación, instalación, mantenimiento), asegúrese de que no haya atmósfera potencialmente explosiva; si es posible, desconecte los circuitos de la fuente de alimentación.
- Instale el dispositivo de acuerdo con las instrucciones del fabricante, el certificado de examen de tipo UE y las reglamentaciones, reglas y normas aplicables.
- Cambios en el instrumento pueden afectar la protección contra explosión y por lo tanto la seguridad, la seguridad, por lo tanto, no está permitido que el usuario final realice reparaciones
- Modificaciones solamente pueden ser realizada por personal autorizado por la empresa VEGA.
- Usar solo piezas de repuesto aprobadas
- Durante la selección del cable de conexión M12, asegúrese de que la temperatura de funcionamiento continuo sea superior a 90 °C

Montaje
Durante el montaje del instrumento, por favor tenga en cuenta:

- Hay que evitar daños mecánicos en el instrumento
- Hay que evitar fricción mecánica
- Si el dispositivo se utiliza como un dispositivo de pared divisoria, el operador debe observar las normas de instalación aplicables.
- Antes del funcionamiento, atornille la conexión eléctrica hasta el tope para asegurar la clase de protección IP indicada en la placa de características. Recomendamos usar una llave dinamométrica adecuada con 3,5 Nm.
- Fije la cubierta protectora suministrada al equipo. Esto sirve como protección contra daños mecánicos debido a un posible impacto. Proceda de la siguiente manera para montar la cubierta protectora:
  - Coloque la tapa protectora a la izquierda (1) o la tapa protectora a la derecha (2) en la carcasa (4) en la zona del conector
  - Poner el cable de conexión sobre la parte superior o la ranura lateral del medio de la tapa
  - A continuación unir la cubierta con la otra mitad de la cubierta protectora y cerrarla con los dos tornillos de cabeza redonda (3) con un par de apriete de 1,0 Nm

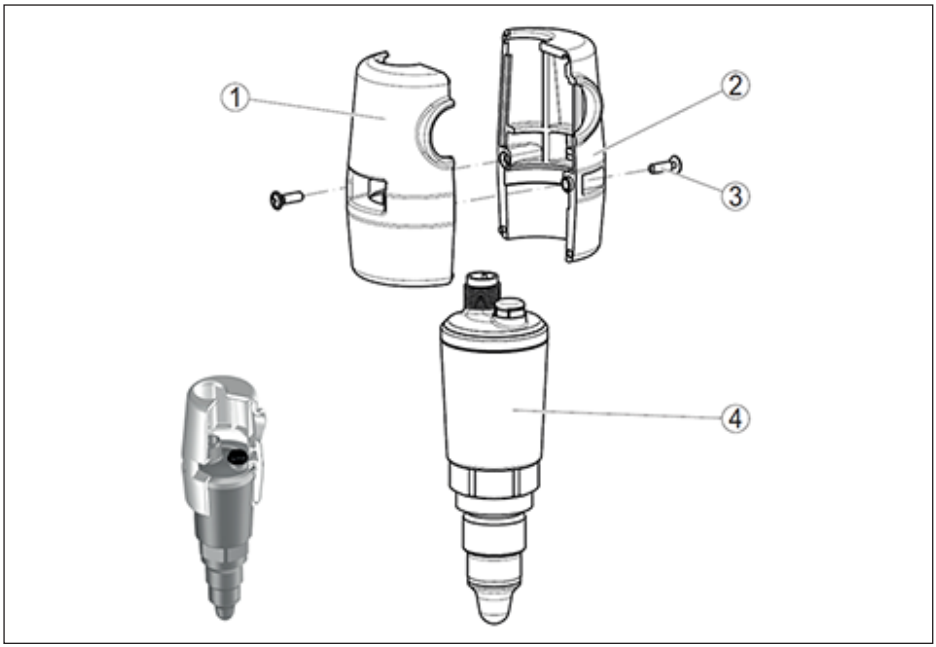

Abb. 4: Fijación de la cubierta protectora

Mantenimiento

Para asegurar el funcionamiento del instrumento se recomienda realizar un control visual periódico de los siguientes puntos:

- Montaje seguro
- Ningún deterioro mecánico o corrosión
- Líneas desgastadas o dañadas de otra manera
- Ninguna conexión floja de las conexiones de los cables, conexiones de compensación de potencial
- Conexiones de líneas marcadas de forma clara y correcta

8 Carga electrostática (ESD)

Respecto al peligro de cargas electrostáticas tener en cuenta:

- Evitar fricción en las superficies
- No limpiar las superficies en seco

Hay que instalar los instrumentos de forma que se pueda excluir lo siguiente:

- cargas electrostáticas a causa de la operación, mantenimiento y limpieza
- carga electrostática inducida por el proceso, por ejemplo, a causa del flujo de productos a medir
- Para materiales con una conductividad menor que 10^{-8} S/m se aplica:
  - El detector de nivel no se puede utilizar si existen fuertes procesos generadores de carga, tales como procesos mecánicos de fricción y separación, pulverización de electrones, etc.
  - En particular, el detector de nivel no se puede montar en un flujo neumático.

- En el caso de polvos extremadamente inflamables con una energía mínima de ignición (MZE) inferior a 3 mJ, el dispositivo no deberá utilizarse en zonas en las que se prevean procesos de carga intensivos

9 Conexión equipotencial/puesta a tierra

La conexión equipotencial del VEGAPOINT 21, 23, 31 se realiza a través del racor roscado. Comprobar que el racor roscado está en contacto eléctrico a tierra. Esto puede lograrse, por ejemplo, conectando la conexión al proceso a un tanque conductor de electricidad integrado en la conexión equipotencial local.

10 Datos eléctricos

Circuito de alimentación y señal.	
Pin 1[+], Pin 3[-]	U = 12 … 35 V DC
Pin 2	I_{max} = 250 mA
Pin 4	IO-Link

11 Datos térmicos

VEGAPOINT 21, 23, 31 con cubierta de plástico

Temperatura máxima de la superficie	**Rango de temperatura de proceso permisible en el electrodo de medición en la zona 20 (EPL Da) o en la zona 21 (EPL Db)**	**Rango de temperatura ambiente permisible en la carcasa de la electrónica en la zona 21 (EPL Db)**
T_{200}130 °C/100 °C	-40 … +115 °C	-40 … ver tabla de temperaturas

Temperatura máxima de la superficie
La temperatura superficial máxima de +130 °C se espera en el área de la punta del sensor en la electrónica del sensor. Esta temperatura disminuye hacia el área de la conexión de enchufe, hasta un máximo de +100 °C.

Reducción de la temperatura ambiente máxima permisible a altas temperaturas de proceso:
Para temperaturas de proceso de -40 °C a +90 °C se puede operar el VEGAPOINT 21, 23, 31 en el rango de temperatura ambiente permisible de -40 °C a +70 °C. Si el equipo tiene temperaturas de proceso más altas, consulte la siguiente tabla para conocer la temperatura ambiente máxima permisible.

Las señales de peligro en la conexión a proceso se refieren a las temperaturas en estas instrucciones de seguridad:

- FOR OTHER WARNINGS AND TEMERATURE RANGES - SEE INSTRUCTIONS
- POUR D'AUTRES AVERTISSEMENTS ET PLAGES DE TEMPÉRATURE - VOIR MODE D'EMPLOI

Tabla de temperatura:

Temperatura de proceso	**Temperatura ambiental máxima permisible**
-40 … +90 °C	+70 °C
≤ 95 °C	+67 °C

Temperatura de proceso	Temperatura ambiental máxima permisible
≤ 100 °C	+63 °C
≤ 105 °C	+58 °C
≤ 110 °C	+54 °C
≤ 115 °C	+50 °C

VEGAPOINT 21, 23, 31 con carcasa metálica completa

Temperatura máxima de la superficie	Rango de temperatura de proceso permisible en el electrodo de medición en la zona 20 (EPL Da) o en la zona 21 (EPL Db)	Rango de temperatura ambiente permisible en la carcasa de la electrónica en la zona 21 (EPL Db)
T_{200} 130 °C/110 °C	-40 … +110 °C +110 … +115 °C	-40 … +70 °C máx. +68 °C

Temperatura máxima de la superficie
La temperatura superficial máxima de +130 °C se espera en el área de la punta del sensor en la electrónica del sensor. Esta temperatura disminuye hacia el área de la conexión de enchufe, hasta un máximo de +110 °C.

Reducción de la temperatura ambiente máxima permisible a altas temperaturas de proceso:
Para temperaturas de proceso de -40 °C a +110 °C se puede operar el VEGAPOINT 21, 23, 31 en el rango de temperatura ambiente permisible de -40 °C a +70 °C. En caso de temperaturas de proceso superiores de hasta 115 °C, la temperatura ambiente máxima permisible es de +68 °C.

Las señales de peligro en la conexión a proceso se refieren a las temperaturas en estas instrucciones de seguridad:

- FOR OTHER WARNINGS AND TEMERATURE RANGES - SEE INSTRUCTIONS
- POUR D'AUTRES AVERTISSEMENTS ET PLAGES DE TEMPÉRATURE - VOIR MODE D'EMPLOI

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ATEX

Safety instructions
VEGAPOINT 21, 23, 31

Dust ignition protection by enclosure "t"

Transistor output PNP/NPN with IO-Link, Three-wire

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Document ID: 62549

UKEX

Contents

Supplementary documentation:

- Operating Instructions VEGAPOINT 21, 23, 31
- UK-Type Examination Certificate UL22UKEX2278X (Document ID: 1011917)
- UK Declaration of Conformity (Document ID: 66278)

Editing status: 2022-04-21

62549-EN-220421

1 Area of applicability

These safety instructions apply to the devices:

- VEGAPOINT 21
- VEGAPOINT 23
- VEGAPOINT 31

With the electronics versions:

- Transistor output PNP/NPN with IO-Link, Three-wire

According to UK-Type Examination Certificate UL22UKEX2278X (certificate number on the type label) and for all instruments with safety instruction 62549.

The classification as well as the respective standards are stated in the UK-Type Examination Certificate.

Standards:

- EN 60079-0: 2018, General Requirements
- EN 60079-31: 2014, Dust ignition protection by enclosure "t"

Type of protection marking:

- Version with plastic housing lid
  - II 1/2D Ex ta/tb IIIC T_{200}130 °C/T100 °C Da/Db
  - II 2D Ex tb IIIC T120 °C/T100 °C Db
- Version with full metal housing
  - II 1/2D Ex ta/tb IIIC T_{200}130 °C/T110 °C Da/Db
  - II 2D Ex tb IIIC T120 °C/T110 °C Db

2 Device configuration/-properties

The detailed device configurations can be retrieved using the serial number search on our homepage.

Move to " www.vega.com" and enter in the search field the serial number of your instrument.

Alternatively, you can find all via your smartphone:

- Download the VEGA Tools app from the " *Apple App Store*", " *Google Play Store*" or " *Baidu Store*"
- Scan the DataMatrix code on the type label of the instrument or
- Enter the serial number manually in the app

3 General information

VEGAPOINT 21, 23, 31 is an impedance point level sensor for point level detection.

An alternating electric field is generated at the tip of the measuring electrode. If the sensor is covered with medium, the impedance of the sensor changes. This change is detected by the electronics and converted into a switching command.

Any buildup is ignored to a certain degree and therefore has no influence on the measurement.

The VEGAPOINT 21, 23, 31 consist of an electronics housing, a process connection element and a sensor.

The VEGAPOINT 21, 23, 31 are suitable for applications in hazardous atmospheres of all combustible materials of explosion groups IIIA, IIIB and IIIC.

The VEGAPOINT 21, 23, 31 are suitable for applications requiring category 1/2D (EPL Da/Db) or 2D (EPL Db) instruments.

4 Application area

Category 1/2D (EPL Da/Db instruments)
The electronics housing of VEGAPOINT 21, 23, 31 is installed in hazardous areas of zone 21 requiring instruments of category 2D (EPL Db). The mechanical fixing element, process connection element is installed in the separating wall, which separates areas requiring instruments of category 2D (EPL Db) or 1D (EPL Da). The sensor measuring system is installed in hazardous areas of zone 20 requiring instruments of category 1D (EPL Da).

Category 2D (EPL Db instruments)
The VEGAPOINT 21, 23, 31 with the mechanical fixing element are installed in hazardous areas of zone 21 requiring category 2D (EPL Db) instruments.

5 Specific conditions of use ("X" identification)

The following overview is listing all special properties of VEGAPOINT 21, 23, 31, which make a labelling with the symbol "X" behind the certificate number necessary.

Electrostatic charging (ESD)
You can find the details in chapter " *Electrostatic charging (ESD)*" of these safety instructions.

Ambient temperature
You can find the details in chapter " *Thermal data*" of these safety instructions.

UV resistance
The sensor tip of the VEGAPOINT 21, 23, 31 must be protected from direct sunlight when installed. The sensor must not be installed in processes in which higher UV radiation is to be expected.

Do not leave the VEGAPOINT 21, 23, 31 mounted outdoors or under UV light without the M12 plug connected.

Impact resistance
The VEGAPOINT 21, 23, 31 must be protected against impact during installation.

Use in zone 20/21 (Ex ta/tb)
The VEGAPOINT 21, 23, 31 is intended for a partial installation in zone 20 and a partial installation in zone 21, e.g. mounted through the wall of a process vessel or silo. The measuring tip is located in zone 20 up to the process fitting, the housing from the process fitting and the cabling is located in zone 21.

6 Additional instructions for safe operation

- The VEGAPOINT 21, 23, 31 is tested according to the requirements of the applicable standards under normal atmospheric conditions from 80 kPa (0.8 bar) to 110 kPa (1.1 bar).
- Further requirements may apply for process pressures outside the usual atmospheric conditions.

Connection conditions
- The VEGAPOINT 21, 23, 31 must always be supplied via an energy-limited circuit according to IEC 61010-1, e.g. via a Class 2 power supply unit
- If necessary, a suitable overvoltage arrester can be connected in front of the VEGAPOINT 21, 23, 31

7 Important information for mounting and maintenance

Separation of the voltage supply
Do not disconnect the M12 connector from the device when it is under voltage. The warning signs

on the device indicate the danger:

- WARNING - DO NOT SEPARATE WHEN ENERGIZED
- AVERTISSEMENT – NE PAS SÉPARER SOUS TENSION

General instructions

The following requirements must be fulfilled for mounting, electrical installation, setup and maintenance of the instrument:

- The staff must be qualified according the respective tasks
- The staff must be trained in explosion protection
- The staff must be familiar with the respectively valid regulations, e.g. planning and installation acc. to IEC/EN 60079-14
- Make sure when working on the instrument (mounting, installation, maintenance) that there is no explosive atmosphere present, the supply circuits should be voltage-free, if possible.
- The instrument has to be mounted according to the manufacturer specifications, the UK-Type Examination Certificate and the valid regulations and standards
- Modifications on the instrument can influence the explosion protection and hence the safety, therefore repairs are not permitted to be conducted by the end user
- Modifications must only be carried out by employees authorized by VEGA company
- Use only approved spare parts
- When selecting the M12 connection cable, ensure that the continuous operating temperature exceeds 90 °C

Mounting

Keep in mind for instrument mounting

- Mechanical damage on the instrument must be avoided
- Mechanical friction must be avoided
- If the device is used as a separating wall device, the operator must observe the applicable installation regulations.
- Before operation, screw the electrical connection tightly up to the stop to ensure the IP protection class indicated on the type plate. We recommend using a suitable torque spanner with 3.5 Nm.
- Attach the supplied protective cover to the unit. This serves to protect the unit against mechanical damage caused by possible impact. Proceed as follows to mount the protective cover:
  - Place the protective cap on the left (1) or protective cap on the right (2) on the housing (4) in the connector area
  - Place the connection cable over the top or side recess of the cap half
  - Now join the cover with the other half of the protective cap and close it with the two pan-head screws (3) with a torque of 1.0 Nm

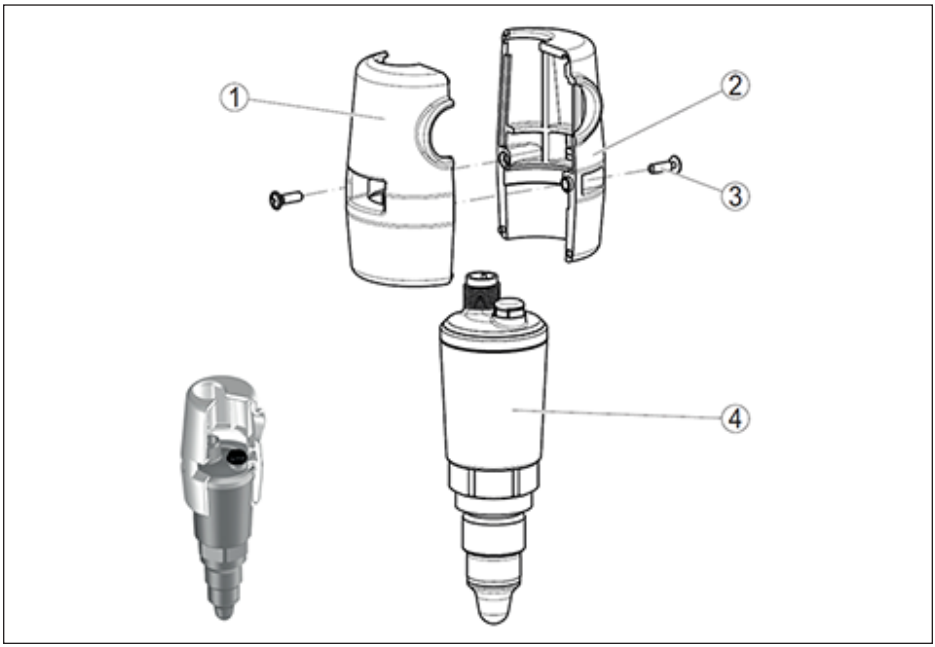

Fig. 1: Attaching the protective cover

Maintenance

To ensure the functionality of the device, periodic visual inspection is recommended for:

- Secure mounting
- No mechanical damages or corrosion
- Worn or otherwise damaged cables
- No loose connections of the line connections, equipotential bonding connections
- Correct and clearly marked cable connections

8 Electrostatic charging (ESD)

Take note in case of danger of electrostatic charges:

- Avoid friction on the surfaces
- Do not dry clean the surfaces

The instruments must be mounted/installed in such a way that the following can be ruled out:

- electrostatic charges during operation, maintenance and cleaning.
- process-related electrostatic charges, e.g. by measuring media flowing past

- For media with a conductivity smaller than 10^{-8} S/m applies:
  - The level measuring instrument must not be used in highly charge generating processes, e.g. mechanical friction and separation processes, spraying of electrons, etc.
  - In particular, the level measuring instrument must not be mounted in a pneumatic conveying flow

- In the case of extremely flammable dusts with a minimum ignition energy (MIE) of less than 3 mJ, the device must not be used in areas where intensive electrostatic charging processes can be expected

9 Potential equalization/Grounding

The potential equalisation connection of the VEGAPOINT 21, 23, 31 is made via the mounting boss. Make sure that the mounting boss is in electrical contact with ground. For example, this can be achieved by connecting the process fitting to an electrically conductive tank container which is integrated into the local potential equalisation.

10 Electrical data

Supply and signal circuit:	
Pin 1[+], Pin 3[-]	U = 12 … 35 V DC
Pin 2	I_{max} = 250 mA
Pin 4	IO-Link

11 Thermal data

VEGAPOINT 21, 23, 31 with plastic housing lid

Max. surface temperature	**Permissible process temperature range at the measuring electrode in zone 20 (EPL Da) or zone 21 (EPL Db)**	**Permissible ambient temperature range on the electronics housing in zone 21 (EPL Db)**
T_{200}130 °C/100 °C	-40 … +115 °C	-40 … see temperature table

Max. surface temperature
The maximum surface temperature of +130 °C can be expected in the area of the sensor tip on the sensor electronics. This temperature decreases towards the area of the plug connection, up to a maximum of +100 °C.

Reduction of the maximum permissible ambient temperature at high process temperatures:
For process temperatures from -40 °C to +90 °C you can operate the VEGAPOINT 21, 23, 31 in the permissible ambient temperature range from -40 °C to +70 °C. If higher process temperatures are present on the device, please refer to the following table for the maximum permissible ambient temperature.

Warning labels on the process fitting refer to the temperatures in these safety instructions:

- FOR OTHER WARNINGS AND TEMPERATURE RANGES - SEE INSTRUCTIONS
- POUR D'AUTRES AVERTISSEMENTS ET PLAGES DE TEMPÉRATURE - VOIR MODE D'EMPLOI

Temperature table:

Process temperature	**Max. permissible ambient temperature**
-40 … +90 °C	+70 °C
≤ 95 °C	+67 °C
≤ 100 °C	+63 °C

Process temperature	Max. permissible ambient temperature
≤ 105 °C	+58 °C
≤ 110 °C	+54 °C
≤ 115 °C	+50 °C

VEGAPOINT 21, 23, 31 with full metal housing

Max. surface temperature	Permissible process temperature range at the measuring electrode in zone 20 (EPL Da) or zone 21 (EPL Db)	Permissible ambient temperature range on the electronics housing in zone 21 (EPL Db)
T_{200}130 °C/110 °C	-40 … +110 °C +110 … +115 °C	-40 … +70 °C max. +68 °C

Max. surface temperature
The maximum surface temperature of +130 °C can be expected in the area of the sensor tip on the sensor electronics. This temperature decreases towards the area of the plug connection, up to a maximum of +110 °C.

Reduction of the maximum permissible ambient temperature at high process temperatures:
For process temperatures from -40 °C to +110 °C you can operate the VEGAPOINT 21, 23, 31 in the permissible ambient temperature range from -40 °C to +70 °C. If higher process temperatures up to and including +115 °C are present, the maximum permissible ambient temperature is +68 °C.

Warning labels on the process fitting refer to the temperatures in these safety instructions:

- FOR OTHER WARNINGS AND TEMPERATURE RANGES - SEE INSTRUCTIONS
- POUR D'AUTRES AVERTISSEMENTS ET PLAGES DE TEMPÉRATURE - VOIR MODE D'EMPLOI

Printing date:

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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UKEX

Safety instructions
VEGAPOINT 21, 23, 31

Dust ignition protection by enclosure "t"

Transistor output PNP/NPN with IO-Link, Three-wire

Document ID: 62549

VEGA

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Contents

Supplementary documentation:

- Operating Instructions VEGAPOINT 21, 23, 31
- Certificate of Conformity IECEx SIR 20.0011X (Document ID: 62551)

Editing status: 2021-05-18

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1 Area of applicability

These safety instructions apply to the devices:

- VEGAPOINT 21
- VEGAPOINT 23
- VEGAPOINT 31

With the electronics versions:

- Transistor output PNP/NPN with IO-Link, Three-wire

According to Certificate of Conformity IECEx SIR 20.0011X (certificate number on the type label) and for all instruments with safety instruction 62549.

The classification as well as the respective standards are stated in the EU type approval certificate.

Standards:

- IEC 60079-0: 2018, General requirements
- IEC 60079-31 (Edition 2), Euipment dust ignition protection by enclosure "t"

Type of protection marking:

- Version with plastic housing lid
  - Ex ta/tb IIIC T_{200}130 °C/T100 °C Da/Db
  - Ex tb IIIC T120 °C/T100 °C Db
- Version with full metal housing
  - Ex ta/tb IIIC T_{200}130 °C/T110 °C Da/Db
  - Ex tb IIIC T120 °C/T110 °C Db

2 Device configuration/-properties

The detailed device configurations can be retrieved using the serial number search on our homepage.

Move to "www.vega.com" and enter in the search field the serial number of your instrument.

Alternatively, you can find all via your smartphone:

- Download the VEGA Tools app from the "*Apple App Store*", "*Google Play Store*" or "*Baidu Store*"
- Scan the DataMatrix code on the type label of the instrument or
- Enter the serial number manually in the app

3 General information

VEGAPOINT 21, 23, 31 is an impedance point level sensor for point level detection.

An alternating electric field is generated at the tip of the measuring electrode. If the sensor is covered with medium, the impedance of the sensor changes. This change is detected by the electronics and converted into a switching command.

Any buildup is ignored to a certain degree and therefore has no influence on the measurement.

The VEGAPOINT 21, 23, 31 consist of an electronics housing, a process connection element and a sensor.

The VEGAPOINT 21, 23, 31 are suitable for applications in hazardous atmospheres of all combustible materials of explosion groups IIIA, IIIB and IIIC.

The VEGAPOINT 21, 23, 31 are suitable for applications requiring EPL Da/Db or EPL Db instruments.

4 Application area

EPL Da/Db instrument
The electronics housing of VEGAPOINT 21, 23, 31 is installed in hazardous areas of zone 21 requiring EPL Db instruments. The mechanical fixing element, process connection element is installed in the separating wall, which separates areas requiring EPL Db or EPL Da instruments. The sensor measuring system is installed in hazardous areas of zone 20 requiring EPL Da instruments.

EPL Db instrument
The VEGAPOINT 21, 23, 31 with the mechanical fixing element are installed in hazardous areas of zone 21 requiring EPL Db instruments.

5 Specific conditions of use ("X" identification)

The following overview is listing all special properties of VEGAPOINT 21, 23, 31, which make a labelling with the symbol "X" behind the certificate number necessary.

Electrostatic charging (ESD)
You can find the details in chapter "*Electrostatic charging (ESD)*" of these safety instructions.

Ambient temperature
You can find the details in chapter "*Thermal data*" of these safety instructions.

UV resistance
The sensor tip of the VEGAPOINT 21, 23, 31 must be protected from direct sunlight when installed. The sensor must not be installed in processes in which higher UV radiation is to be expected.

Do not leave the VEGAPOINT 21, 23, 31 mounted outdoors or under UV light without the M12 plug connected.

Impact resistance
The VEGAPOINT 21, 23, 31 must be protected against impact during installation.

Use in Zone 20/21 (Ex ta/tb)
The VEGAPOINT 21, 23, 31 is intended for a partial installation in zone 20 and a partial installation in zone 21, e.g. mounted through the wall of a process vessel or silo. The measuring tip is located in zone 20 up to the process fitting, the housing from the process fitting and the cabling is located in zone 21.

6 Additional instructions for safe operation

- The VEGAPOINT 21, 23, 31 is tested according to the requirements of the applicable standards under normal atmospheric conditions from 80 kPa (0.8 bar) to 110 kPa (1.1 bar).
- Further requirements may apply for process pressures outside the usual atmospheric conditions.

Connection conditions
- The VEGAPOINT 21, 23, 31 must always be supplied via an energy-limited circuit according to IEC 61010-1, e.g. via a Class 2 power supply unit
- If necessary, a suitable overvoltage arrester can be connected in front of the VEGAPOINT 21, 23, 31

7 Important information for mounting and maintenance

Separation of the voltage supply
Do not disconnect the M12 connector from the device when it is under voltage. The warning signs on the device indicate the danger:

- WARNING - DO NOT SEPARATE WHEN ENERGIZED
- AVERTISSEMENT – NE PAS SÉPARER SOUS TENSION

General instructions

The following requirements must be fulfilled for mounting, electrical installation, setup and maintenance of the instrument:

- The staff must be qualified according the respective tasks
- The staff must be trained in explosion protection
- The staff must be familiar with the respectively valid regulations, e.g. planning and installation acc. to IEC 60079-14
- Make sure when working on the instrument (mounting, installation, maintenance) that there is no explosive atmosphere present, the supply circuits should be voltage-free, if possible.
- The instrument has to be mounted according to the manufacturer specifications, the Certificate of Conformity and the valid regulations and standards
- Modifications on the instrument can influence the explosion protection and hence the safety, therefore repairs are not permitted to be conducted by the end user
- Modifications must only be carried out by employees authorized by VEGA company
- Use only approved spare parts
- When selecting the M12 connection cable, ensure that the continuous operating temperature exceeds 90 °C

Mounting

Keep in mind for instrument mounting

- Mechanical damage on the instrument must be avoided
- Mechanical friction must be avoided
- If the device is used as a separating wall device, the operator must observe the applicable installation regulations.
- Before operation, screw the electrical connection tightly up to the stop to ensure the IP protection class indicated on the type plate. We recommend using a suitable torque spanner with 3.5 Nm.
- Attach the supplied protective cover to the unit. This serves to protect the unit against mechanical damage caused by possible impact. Proceed as follows to mount the protective cover:
  - Place the protective cap on the left (1) or protective cap on the right (2) on the housing (4) in the connector area
  - Place the connection cable over the top or side recess of the cap half
  - Now join the cover with the other half of the protective cap and close it with the two pan-head screws (3) with a torque of 1.0 Nm

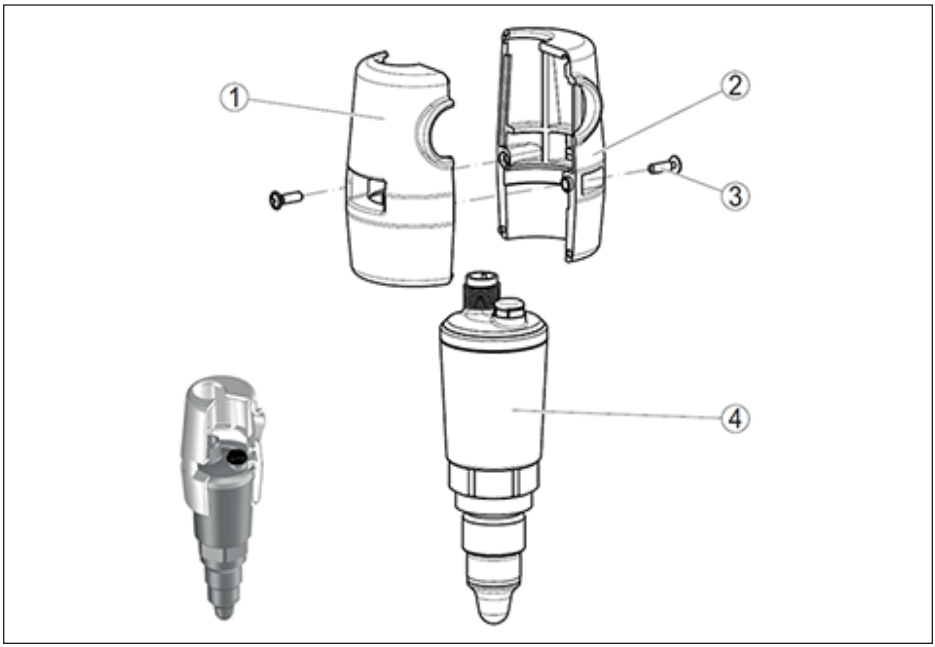

Fig. 1: Attaching the protective cover

Maintenance

To ensure the functionality of the device, periodic visual inspection is recommended for:

- Secure mounting
- No mechanical damages or corrosion
- Worn or otherwise damaged cables
- No loose connections of the line connections, equipotential bonding connections
- Correct and clearly marked cable connections

8 Electrostatic charging (ESD)

Take note in case of danger of electrostatic charges:

- Avoid friction on the surfaces
- Do not dry clean the surfaces

The instruments must be mounted/installed in such a way that the following can be ruled out:

- electrostatic charges during operation, maintenance and cleaning.
- process-related electrostatic charges, e.g. by measuring media flowing past

- For media with a conductivity smaller than 10^{-8} S/m applies:
  - The level measuring instrument must not be used in highly charge generating processes, e.g. mechanical friction and separation processes, spraying of electrons, etc.
  - In particular, the level measuring instrument must not be mounted in a pneumatic conveying flow

- In the case of extremely flammable dusts with a minimum ignition energy (MIE) of less than 3 mJ, the device must not be used in areas where intensive electrostatic charging processes can be expected

9 Potential equalization/Grounding

The potential equalisation connection of the VEGAPOINT 21, 23, 31 is made via the mounting boss. Make sure that the mounting boss is in electrical contact with ground. For example, this can be achieved by connecting the process fitting to an electrically conductive tank container which is integrated into the local potential equalisation.

10 Electrical data

Supply and signal circuit:	
Pin 1[+], Pin 3[-]	U = 12 … 35 V DC
Pin 2	I_{max} = 250 mA
Pin 4	IO-Link

11 Thermal data

VEGAPOINT 21, 23, 31 with plastic housing lid

Max. surface temperature	**Permissible process temperature range at the measuring electrode in zone 20 (EPL Da) or zone 21 (EPL Db)**	**Permissible ambient temperature range on the electronics housing in zone 21 (EPL Db)**
T_{200}130 °C/100 °C	-40 … +115 °C	-40 … see temperature table

Max. surface temperature
The maximum surface temperature of +130 °C can be expected in the area of the sensor tip on the sensor electronics. This temperature decreases towards the area of the plug connection, up to a maximum of +100 °C.

Reduction of the maximum permissible ambient temperature at high process temperatures:
For process temperatures from -40 °C to +90 °C you can operate the VEGAPOINT 21, 23, 31 in the permissible ambient temperature range from -40 °C to +70 °C. If higher process temperatures are present on the device, please refer to the following table for the maximum permissible ambient temperature.

Warning labels on the process fitting refer to the temperatures in these safety instructions:

- FOR OTHER WARNINGS AND TEMERATURE RANGES - SEE INSTRUCTIONS
- POUR D'AUTRES AVERTISSEMENTS ET PLAGES DE TEMPÉRATURE - VOIR MODE D'EMPLOI

Temperature table:

Process temperature	**Max. permissible ambient temperature**
-40 … +90 °C	+70 °C
≤ 95 °C	+67 °C
≤ 100 °C	+63 °C

Process temperature	Max. permissible ambient temperature
≤ 105 °C	+58 °C
≤ 110 °C	+54 °C
≤ 115 °C	+50 °C

VEGAPOINT 21, 23, 31 with full metal housing

Max. surface temperature	Permissible process temperature range at the measuring electrode in zone 20 (EPL Da) or zone 21 (EPL Db)	Permissible ambient temperature range on the electronics housing in zone 21 (EPL Db)
T_{200}130 °C/110 °C	-40 … +110 °C +110 … +115 °C	-40 … +70 °C max. +68 °C

Max. surface temperature
The maximum surface temperature of +130 °C can be expected in the area of the sensor tip on the sensor electronics. This temperature decreases towards the area of the plug connection, up to a maximum of +110 °C.

Reduction of the maximum permissible ambient temperature at high process temperatures:
For process temperatures from -40 °C to +110 °C you can operate the VEGAPOINT 21, 23, 31 in the permissible ambient temperature range from -40 °C to +70 °C. If higher process temperatures up to and including +115 °C are present, the maximum permissible ambient temperature is +68 °C.

Warning labels on the process fitting refer to the temperatures in these safety instructions:

- FOR OTHER WARNINGS AND TEMERATURE RANGES - SEE INSTRUCTIONS
- POUR D'AUTRES AVERTISSEMENTS ET PLAGES DE TEMPÉRATURE - VOIR MODE D'EMPLOI

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IECEx

Safety instructions
VEGAPOINT 21, 23, 31

Dust ignition protection by enclosure "t"

Transistor output PNP/NPN with IO-Link, Three-wire

Document ID: 62549

VEGA

Contents

Supplementary documentation:

- Operating Instructions VEGAPOINT 21, 23, 31
- Certificate of Conformity CSA 22CA80109435X (Document ID: 62552)

Editing status: 2022-10-06

62549-EN-221006

1 Area of applicability

These safety instructions apply to the devices:

- VEGAPOINT 21
- VEGAPOINT 23
- VEGAPOINT 31

With the electronics versions:

- Transistor output PNP/NPN with IO-Link, Three-wire

According to Certificate of Conformity CSA 22CA80109435X (certificate number on the type label) and for all instruments with safety instruction 62549.

The classification as well as the respective standards are stated in the Certificate of Conformity.

Standards:

- CAN/CSA C22.2 No. 60079-0:19
- CAN/CSA-C22.2 No. 60079-31:15
- ANSI/UL 60079-0-2020 (Edition 7)
- ANSI/UL 60079-31-2015 (Edition 2)

Type of protection marking:

- Version with plastic housing lid
  - Class II & III, Division 2 Groups FG T120°C/T100°C;
  - Ex ta/tc IIIC T200 130°C/T100°C Da/Dc
  - Zone 20/Zone 22 AEx ta/tc IIIC T130°C/T100°C Da/Dc
  - Ex tb/tc IIIC T120°C/T100°C Db/Dc
  - Zone 21/Zone 22 AEx tb/tc IIIC T120°C/T100°C Db/Dc
  - Ex tc IIIC T120°C/T100°C Dc
  - Zone 22 AEx tc IIIC T120°C/T100°C Dc
- Version with full metal housing
  - Class II & III, Division 2 Groups FG T120°C/T110°C;
  - Ex ta/tc IIIC T200 130°C/T110°C Da/Dc
  - Zone 20/Zone 22 AEx ta/tc IIIC T130°C/T110°C Da/Dc
  - Ex tb/tc IIIC T120°C/T110°C Db/Dc
  - Zone 21/Zone 22 AEx tb/tc IIIC T120°C/T110°C Db/Dc
  - Ex tc IIIC T120°C/T110°C Dc
  - Zone 22 AEx tc IIIC T120°C/T110°C Dc

2 Device configuration/-properties

The detailed device configurations can be retrieved using the serial number search on our homepage.

Move to " www.vega.com" and enter in the search field the serial number of your instrument.

Alternatively, you can find all via your smartphone:

- Download the VEGA Tools app from the " *Apple App Store*", " *Google Play Store*" or " *Baidu Store*"
- Scan the DataMatrix code on the type label of the instrument or
- Enter the serial number manually in the app

3 General information

VEGAPOINT 21, 23, 31 is an impedance point level sensor for point level detection.

An alternating electric field is generated at the tip of the measuring electrode. If the sensor is covered with medium, the impedance of the sensor changes. This change is detected by the electronics and converted into a switching command.

Any buildup is ignored to a certain degree and therefore has no influence on the measurement.

The VEGAPOINT 21, 23, 31 consist of an electronics housing, a process connection element and a sensor.

The VEGAPOINT 21, 23, 31 are suitable for applications in hazardous atmospheres of all combustible materials of explosion groups IIIA, IIIB and IIIC.

The VEGAPOINT 21, 23, 31 are suitable for applications requiring EPL Da/Dc, EPL Db/Dc or EPL Dc instruments.

In the OrdLoc-Approval the equipment has only been tested for electrical safety. No evaluations of functional safety and performance characteristics have been performed.

4 Application area

EPL Da/Dc or EPL Db/Dc instrument
The electronics housing of VEGAPOINT 21, 23, 31 is installed in hazardous areas of zone 22 requiring EPL Dc instruments. The mechanical fixing element, process connection element is installed in the separating wall, which separates areas requiring EPL Db or EPL Da instruments. The sensor measuring system is installed in hazardous areas of zone 20 or 21 requiring EPL Da or EPL Db instruments.

EPL Dc instrument
The VEGAPOINT 21, 23, 31 with the mechanical fixing element are installed in hazardous areas of zone 22 requiring EPL Dc instruments.

5 Specific conditions of use ("X" identification)

The following overview is listing all special properties of VEGAPOINT 21, 23, 31, which make a labelling with the symbol "X" behind the certificate number necessary.

Electrostatic charging (ESD)
You can find the details in chapter " *Electrostatic charging (ESD)*" of these safety instructions.

Ambient temperature
You can find the details in chapter " *Thermal data*" of these safety instructions.

UV resistance
The sensor tip of the VEGAPOINT 21, 23, 31 must be protected from direct sunlight when installed. The sensor must not be installed in processes in which higher UV radiation is to be expected.

Do not leave the VEGAPOINT 21, 23, 31 mounted outdoors or under UV light without the M12 plug connected.

Impact resistance
The VEGAPOINT 21, 23, 31 must be protected against impact during installation.

Use in zone 20/22 (Ex ta/tc) or zone 21/22 (Ex tb/tc)
The VEGAPOINT 21, 23, 31 is intended for a partial installation in zone 20 or 21 and a partial installation in zone 22, e.g. mounted through the wall of a process vessel or silo. The measuring tip is located in zone 20 or 21 up to the process fitting, the housing from the process fitting and the cabling is located in zone 22.

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6 Additional instructions for safe operation

- The VEGAPOINT 21, 23, 31 is tested according to the requirements of the applicable standards under normal atmospheric conditions from 80 kPa (0.8 bar) to 110 kPa (1.1 bar).
- Further requirements may apply for process pressures outside the usual atmospheric conditions.

Connection conditions

- The VEGAPOINT 21, 23, 31 must always be supplied via an energy-limited circuit according to IEC 61010-1, e.g. via a Class 2 power supply unit
- If necessary, a suitable overvoltage arrester can be connected in front of the VEGAPOINT 21, 23, 31

7 Important information for mounting and maintenance

Separation of the voltage supply

Do not disconnect the M12 connector from the device when it is under voltage. The warning signs on the device indicate the danger:

- WARNING - DO NOT SEPARATE WHEN ENERGIZED
- AVERTISSEMENT – NE PAS SÉPARER SOUS TENSION

General instructions

The following requirements must be fulfilled for mounting, electrical installation, setup and maintenance of the instrument:

- The staff must be qualified according the respective tasks
- The staff must be trained in explosion protection
- The staff must be familiar with the respectively valid regulations, e.g. planning and installation acc. to IEC 60079-14
- Wiring method should be done as per Section 18-190 and 18-250 from CEC Part I and NEC Article 506.15 for Zone 20 and Zone 22
- Make sure when working on the instrument (mounting, installation, maintenance) that there is no explosive atmosphere present, the supply circuits should be voltage-free, if possible.
- The instrument has to be mounted according to the manufacturer specifications, the Certificate of Conformity and the valid regulations and standards
- Modifications on the instrument can influence the explosion protection and hence the safety, therefore repairs are not permitted to be conducted by the end user
- Modifications must only be carried out by employees authorized by VEGA company
- Use only approved spare parts
- When selecting the M12 connection cable, ensure that the continuous operating temperature exceeds 90 °C
- The cable assembly must always be connected during operation
- Disconnection and reconnection of the cable assembly has to be done by trained service personnel
- If the socket is not connected to a cable it shall be protected from environmental influences, e.g. put on the plastic plug on the M12 connector which was part of the delivery

Mounting

Keep in mind for instrument mounting

- Mechanical damage on the instrument must be avoided
- Mechanical friction must be avoided
- If the device is used as a separating wall device, the operator must observe the applicable installation regulations.

- Before operation, screw the electrical connection tightly up to the stop to ensure the IP protection class indicated on the type plate. We recommend using a suitable torque spanner with 3.5 Nm.
- Attach the supplied protective cover to the unit. This serves to protect the unit against mechanical damage caused by possible impact. Proceed as follows to mount the protective cover:
  – Place the protective cap on the left (1) or protective cap on the right (2) on the housing (4) in the connector area
  – Place the connection cable over the top or side recess of the cap half
  – Now join the cover with the other half of the protective cap and close it with the two pan-head screws (3) with a torque of 1.0 Nm

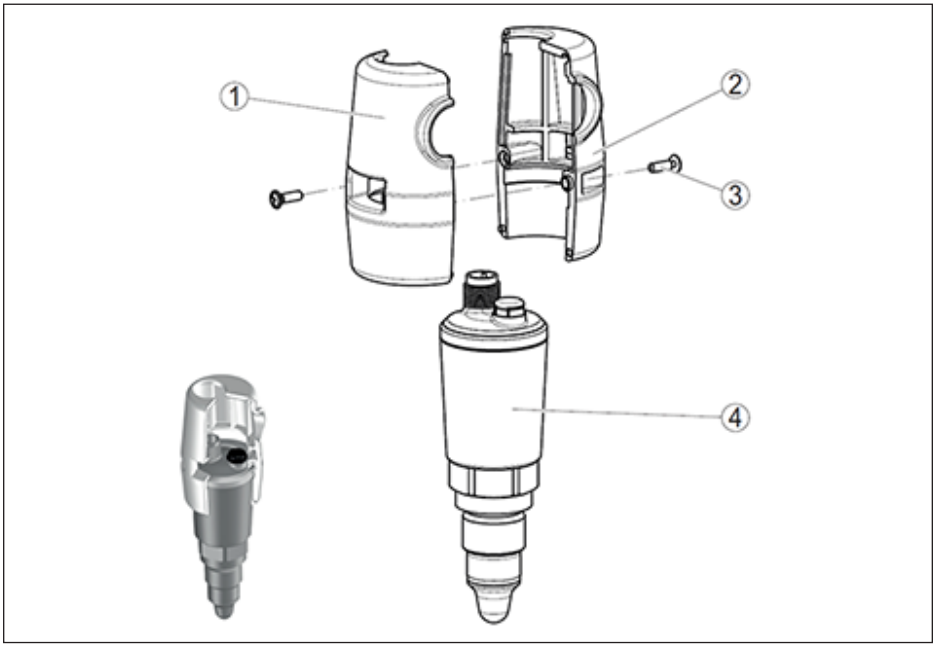

Fig. 1: Attaching the protective cover

Maintenance

To ensure the functionality of the device, periodic visual inspection is recommended for:

- Secure mounting
- No mechanical damages or corrosion
- Worn or otherwise damaged cables
- No loose connections of the line connections, equipotential bonding connections
- Correct and clearly marked cable connections

8 Electrostatic charging (ESD)

Take note in case of danger of electrostatic charges:

- Avoid friction on the surfaces
- Do not dry clean the surfaces

The instruments must be mounted/installed in such a way that the following can be ruled out:

- electrostatic charges during operation, maintenance and cleaning.
- process-related electrostatic charges, e.g. by measuring media flowing past

- For media with a conductivity smaller than 10^{-8} S/m applies:
  – The level measuring instrument must not be used in highly charge generating processes, e.g. mechanical friction and separation processes, spraying of electrons, etc.
  – In particular, the level measuring instrument must not be mounted in a pneumatic conveying flow
- In the case of extremely flammable dusts with a minimum ignition energy (MIE) of less than 3 mJ, the device must not be used in areas where intensive electrostatic charging processes can be expected

9 Potential equalization/Grounding

The potential equalisation connection of the VEGAPOINT 21, 23, 31 is made via the mounting boss. Make sure that the mounting boss is in electrical contact with ground. For example, this can be achieved by connecting the process fitting to an electrically conductive tank container which is integrated into the local potential equalisation.

10 Electrical data

Supply and signal circuit:	
Pin 1[+], Pin 3[-]	U = 12 … 35 V DC
Pin 2	I_{max} = 250 mA
Pin 4	IO-Link

11 Thermal data

VEGAPOINT 21, 23, 31 with plastic housing lid

Max. surface temperature	**Permissible process temperature range at the measuring electrode in zone 20 (EPL Da), zone 21 (EPL Db) or zone 22 (EPL Dc)**	**Permissible ambient temperature range on the electronics housing in zone 22 (EPL Dc)**
T_{200}130 °C/100 °C	-40 … +115 °C (-40 … +239 °F)	-40 °C (-40 °F) … see temperature table

Max. surface temperature
The maximum surface temperature of +130 °C (+266 °F) can be expected in the area of the sensor tip on the sensor electronics. This temperature decreases towards the area of the plug connection, up to a maximum of +100 °C (+212 °F).

Reduction of the maximum permissible ambient temperature at high process temperatures:
For process temperatures from -40 °C to +90 °C (-40 °F to +194 °F) you can operate the VEGAPOINT 21, 23, 31 in the permissible ambient temperature range from -40 °C to +70 °C (-40 °F to +158 °F). If higher process temperatures are present on the device, please refer to the following table for the maximum permissible ambient temperature.

Warning labels on the process fitting refer to the temperatures in these safety instructions:

- FOR OTHER WARNINGS AND TEMPERATURE RANGES - SEE INSTRUCTIONS
- POUR D'AUTRES AVERTISSEMENTS ET PLAGES DE TEMPÉRATURE - VOIR MODE D'EMPLOI

Temperature table:

Process temperature	Max. permissible ambient temperature
-40 … +90 °C (-40 … +194 °F)	+70 °C (+158 °F)
≤ 95 °C (+203 °F)	+67 °C (+153 °F)
≤ 100 °C (+212 °F)	+63 °C (+145 °F)
≤ 105 °C (+221 °F)	+58 °C (+137 °F)
≤ 110 °C (+230 °F)	+54 °C (+130 °F)
≤ 115 °C (+239 °F)	+50 °C (+122 °F)

VEGAPOINT 21, 23, 31 with full metal housing

Max. surface temperature	Permissible process temperature range at the measuring electrode in zone 20 (EPL Da), zone 21 (EPL Db) or zone 22 (EPL Dc)	Permissible ambient temperature range on the electronics housing in zone 22 (EPL Dc)
T_{200}130 °C/110 °C	-40 … +110 °C (-40 … +230 °F) +110 … +115 °C (+230 … +239 °F)	-40 … +70 °C (-40 … +158 °F) max. +68 °C (+155 °F)

Max. surface temperature
The maximum surface temperature of +130 °C (+266 °F) can be expected in the area of the sensor tip on the sensor electronics. This temperature decreases towards the area of the plug connection, up to a maximum of +110 °C (+230 °F).

Reduction of the maximum permissible ambient temperature at high process temperatures:
For process temperatures from -40 °C to +110 °C (-40 °F to +230 °F) you can operate the VEGAPOINT 21, 23, 31 in the permissible ambient temperature range from -40 °C to +70 °C (-40 °F to +158 °F). If higher process temperatures are present on the instrument, the maximum permitted ambient temperature is +68 °C (+155 °F).

Warning labels on the process fitting refer to the temperatures in these safety instructions:

- FOR OTHER WARNINGS AND TEMPERATURE RANGES - SEE INSTRUCTIONS
- POUR D'AUTRES AVERTISSEMENTS ET PLAGES DE TEMPÉRATURE - VOIR MODE D'EMPLOI

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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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