

Sicherheitshinweise / Safety instructions

**ATEX/ UKEX / IECEx /
c-FM-us / c-CSA-us**

VEGAPULS C 21, C 22, C 23

Eigensicherheit "i"

Intrinsic safety "i"



Document ID: 62412



VEGA

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- EU-type approval certificate KIWA 19 ATEX 0028 X (Document ID: 62415)
- UK Type Examination Certificate UL21UKEX2284X (Document ID: 66421)
- Certificate of Conformity IECEX KIWA 19.0015 X (Document ID: 62416)
- Certificate of Conformity FM20CA0003X, FM20US0007X (Document ID: 62417)
- Certificate of Conformity CSA 19CA80000123X (Document ID: 62418)

Redaktionsstand: 2023-04-27



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

VEGAPULS C 21, C 22, C 23

Eigensicherheit "i"

Zweileiter 4 ... 20 mA/HART



CE 0044



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VEGA

ATEX

DE**EN****FR****ES**

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Ergänzende Dokumentation:

- Betriebsanleitungen VEGAPULS C 21, C 22, C 23
- EU-Baumusterprüfbescheinigung KIWA 19 ATEX 0028 X (Document ID: 62415)
- EU-Konformitätserklärung (Document ID: 61787)

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1 Geltung

Diese Sicherheitshinweise gelten für die VEGAPULS C 21, C 22, C 23 der Typenreihen:

- VEGAPULS C 21
- VEGAPULS C 22
- VEGAPULS C 23

Mit den Elektronikausführungen:

- H - Zweileiter 4 ... 20 mA/HART

Gemäß der EU-Baumusterprüfbescheinigung KIWA 19 ATEX 0028 X (Bescheinigungsnummer auf dem Typschild) und für alle Geräte mit dem Sicherheitshinweis 62412.

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

Normenstände:

- EN 60079-0: 2018, Allgemeine Bestimmungen
- EN 60079-11: 2012, Eigensicherheit "i"
- EN 60079-26: 2015, Betriebsmittel mit Geräteschutzniveau (EPL) Ga

Zündschutzkennzeichen:

- II 1G, 1/2G Ex ia IIC T4 ... T1 Ga, Ga/Gb
- II 1D, 1/2D Ex ia IIIC T₂₀₀ 134 °C Da, Da/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

Die VEGAPULS C 21, C 22, C 23 in Zündschutzart Eigensicherheit „i“ dienen zur Erfassung des Abstandes zwischen einer Mediumoberfläche und dem Sensor mittels hochfrequenter, elektromagnetischer Wellen im GHz-Bereich.

Die Elektronik nutzt die Laufzeit der von der Mediumoberfläche reflektierten Signale, um den Abstand zur Mediumoberfläche zu errechnen.

Die VEGAPULS C 21, C 22, C 23 bestehen aus einem Elektronikgehäuse, einem Prozessanschlusselement und einem Messfühler bzw. einer Antenne.

Die VEGAPULS C 21, C 22, C 23 sind geeignet für den Einsatz in explosionsfähiger Atmosphäre aller brennbaren Stoffe der Explosionsgruppen IIA, IIB, IIC und IIIA, IIIB, IIIC.

Die VEGAPULS C 21, C 22, C 23 sind für Anwendungen geeignet, die Betriebsmittel der Kategorie 1G (EPL Ga) oder 1/2G (EPL Ga/Gb) erfordern.

Die VEGAPULS C 21, C 22, C 23 sind für Anwendungen geeignet, die Betriebsmittel der Kategorie 1D (EPL Da) oder 1/2D (EPL Da/Db) erfordern.

4 Anwendungsbereich

Kategorie 1G bzw. 1D (EPL Ga- bzw. EPL Da-Betriebsmittel)

Die VEGAPULS C 21, C 22, C 23 mit dem mechanischen Befestigungselement werden im explosionsgefährdeten Bereich der Zone 0 bzw. Zone 20 errichtet, die ein Betriebsmittel der Kategorie 1G (EPL Ga) bzw. 1D (EPL Da) erfordern.

Kategorie 1/2G bzw 1/2D (EPL Ga/Gb- bzw. EPL Da/Db-Betriebsmittel)

Die VEGAPULS C 21, C 22, C 23 mit dem mechanischen Befestigungselement werden im explosionsgefährdeten Bereich der Zone 1 bzw. Zone 21 errichtet, die ein Betriebsmittel der Kategorie 2G bzw. 2D (EPL Gb bzw. EPL Db) erfordern. Das mechanische Befestigungselement, Prozessanschlusselement wird in der Trennwand errichtet, die die Bereiche voneinander trennt, in denen Betriebsmittel der Kategorie 2G bzw. 2D (EPL Gb bzw. EPL Db) oder 1G bzw. 1D (EPL Ga bzw. EPL Da) erforderlich sind. Das Sensormesssystem wird im explosionsgefährdeten Bereich der Zone 0 bzw. Zone 20 errichtet, die ein Betriebsmittel der Kategorie 1G bzw. 1D (EPL Ga bzw. EPL Da) erfordert.

5 Besondere Betriebsbedingungen ("X"-Kennzeichnung)

Die nachfolgende Übersicht listet alle besonderen Eigenschaften des VEGAPULS C 21, C 22, C 23, 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.

6 Zusätzliche Hinweise für den sicheren Betrieb

- Für Prozessdrücke außerhalb der üblichen atmosphärischen Bedingungen von 80 kPa (0,8 bar) bis 110 kPa (1,1 bar) können weitergehende Anforderungen gelten.

Anschlussbedingungen

- Die Anschlussleitung ist bei fester Verlegung für einen Betriebstemperaturbereich von -40 ... +80 °C geeignet. Für max. 10000 Betriebsstunden darf die Temperatur am Anschlusskabel +90 °C betragen.
- Die Anschlussleitung ist bei flexibler Verlegung für einen Betriebstemperaturbereich von -25 ... +80 °C geeignet. Für max. 10000 Betriebsstunden darf die Temperatur am Anschlusskabel +90 °C betragen.
- Dem VEGAPULS C 21, C 22, C 23 kann bei Bedarf ein geeigneter Überspannungsschutz vorgeschaltet werden

7 Wichtige Hinweise für die Montage und Wartung

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

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

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

Die Warnhinweise auf dem Typschild weisen auf die Gefahr hin:

- **WARNING - POTENTIAL ELECTROSTATIC CHARGING HAZARD – SEE INSTRUCTIONS**
- **AVERTISSEMENT – DANGER POTENTIEL DE CHARGES ELECTROSTATIQUES – VOIR INSTRUCTION**
- Für Messstoffe mit einer Leitfähigkeit kleiner 10^{-9} 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 Elektrische Daten

Versorgungs- und Signalstromkreis:	
Braune Litze [+] Blaue Litze [-]	In Zündschutzart Eigensicherheit Ex ia IIC, IIIC Zum Anschluss an einen bescheinigten, eigensicheren Stromkreis. $U_i \leq 30 \text{ V DC}$ $I_i \leq 131 \text{ mA}$ $P_i \leq 983 \text{ mW}$ Die wirksame innere Kapazität C_i bzw. Induktivität L_i muss berechnet werden: $L_i = 0,65 \mu\text{H/m} \cdot \text{Kabellänge in Meter}$ $C_i = 180 \text{ pF/m} \cdot \text{Kabellänge in Meter}$
Die Abschirmung (schwarz) muss versorgungsseitig geerdet werden.	

10 Thermische Daten

Betrieb in explosiver Gasatmosphäre:

Temperaturklasse	Zulässiger Prozesstemperaturbereich an der Antenne in Zone 0 (EPL Ga)	Zulässiger Umgebungstemperaturbereich am Elektronikgehäuse in Zone 0 (EPL Ga)
T4 ... T1	-40 ... +80 °C	-40 ... +80 °C

Betrieb in explosiver Staubatmosphäre:

Erlaubter Umgebungs- bzw. Prozesstemperaturbereich: -40 ... +80 °C

In Zone 20, Zone 20/21:

Maximale Oberflächentemperatur = Umgebungs- bzw. Prozesstemperatur +54 K = +134 °C

DE**EN****FR****ES**

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Supplementary documentation:

- Operating Instructions VEGAPULS C 21, C 22, C 23
- EU-type approval certificate KIWA 19 ATEX 0028 X (Document ID: 62415)
- EU declaration of conformity (Document ID: 61787)

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1 Area of applicability

These safety instructions apply to the VEGAPULS C 21, C 22, C 23 of type series:

- VEGAPULS C 21
- VEGAPULS C 22
- VEGAPULS C 23

With the electronics versions:

- H - Two-wire 4 ... 20 mA/HART

According to EU type approval certificate KIWA 19 ATEX 0028 X (certificate number on the type label) and for all instruments with safety instruction 62412.

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

Standards:

- EN 60079-0: 2018, General Requirements
- EN 60079-11: 2012, Intrinsic safety "i"
- EN 60079-26: 2015, Equipment with equipment protection level (EPL) Ga

Type of protection marking:

- II 1G, 1/2G Ex ia IIC T4 ... T1 Ga, Ga/Gb
- II 1D, 1/2D Ex ia IIIC T₂₀₀ 134 °C Da, Da/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

The VEGAPULS C 21, C 22, C 23 in ignition protection type intrinsic safety "i" are used for detection of the distance between medium surface and sensor by means of high frequency, electromagnetic waves in the GHz range.

The electronics uses the running time of the signals reflected by the medium surface to calculate the distance to the medium surface.

The VEGAPULS C 21, C 22, C 23 consist of an electronics housing, a process connection element and a sensor or an antenna.

The VEGAPULS C 21, C 22, C 23 are suitable for applications in hazardous atmospheres of all combustible materials of explosion groups IIA, IIB, IIC and IIIA, IIIB, IIIC.

The VEGAPULS C 21, C 22, C 23 are suitable for applications requiring category 1G (EPL Ga) or 1/2G (EPL Ga/Gb) instruments.

The VEGAPULS C 21, C 22, C 23 are suitable for applications requiring category 1D (EPL Da) or 1/2D (EPL Da/Db) instruments.

4 Application area

Category 1G resp. 1D (EPL Ga resp. EPL Da instruments)

The VEGAPULS C 21, C 22, C 23 with the mechanical fixing element are installed in hazardous areas of zone 0 or zone 20 requiring category 1G (EPL Ga) resp. 1D (EPL Da) instruments.

Category 1/2G resp. 1/2D (EPL Ga/Gb resp. EPL Da/Db instruments)

The VEGAPULS C 21, C 22, C 23 with mechanical fixing element are installed in hazardous areas of zone 1 resp. zone 21 requiring instruments of category 2G resp. 2D (EPL Gb resp. EPL Db). The mechanical fixing element, process connection element is installed in the separating wall, which separates areas requiring instruments of category 2G resp. 2D (EPL Gb resp. EPL Db) or 1G resp. 1D (EPL Ga resp. EPL Da). The sensor measuring system is installed in hazardous areas of zone 0 resp. zone 20 requiring instruments of category 1G resp. 1D (EPL Ga resp. EPL Da).

5 Specific conditions of use ("X" identification)

The following overview is listing all special properties of VEGAPULS C 21, C 22, C 23, 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.

6 Additional instructions for safe operation

- For process pressures outside the standard atmospheric conditions of 80 kPa (0.8 bar) to 110 kPa (1.1 bar) additional requirements can be valid.

Connection conditions

- For fixed installation, the connecting cable is suitable for an operating temperature range of -40 ... +80 °C. The temperature at the connection cable may be +90 °C for max. 10000 operating hours.
- For flexible installation, the connecting cable is suitable for an operating temperature range of -25 ... +80 °C. The temperature at the connection cable may be +90 °C for max. 10000 operating hours.
- If necessary, a suitable overvoltage arrester can be connected in front of the VEGAPULS C 21, C 22, C 23

7 Important information for mounting and maintenance

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

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.

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

The warning on the type label indicates danger:

- **WARNING - POTENTIAL ELECTROSTATIC CHARGING HAZARD – SEE INSTRUCTIONS**
- **AVERTISSEMENT – DANGER POTENTIEL DE CHARGES ELECTROSTATIQUES – VOIR INSTRUCTION**
- 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 Electrical data

Supply and signal circuit:	
Brown strand [+] Blue strand [-]	In type of protection intrinsic safety Ex ia IIC, IIIC For connection to a certified, intrinsically safe circuit. $U_i \leq 30 \text{ V DC}$ $I_i \leq 131 \text{ mA}$ $P_i \leq 983 \text{ mW}$ The effective inner capacitances C_i or inductances L_i must be calculated: $L_i = 0.65 \mu\text{H/m} \cdot \text{Cable length in meters}$ $C_i = 180 \text{ pF/m} \cdot \text{Cable length in meters}$
The shielding (black) must be earthed on the supply side.	

10 Thermal data

Operation in an explosive gas atmosphere:

Temperature class	Permissible process temperature range on the antenna in zone 0 (EPL Ga)	Permissible ambient temperature range on the electronics housing in zone 0 (EPL Ga)
T4 ... T1	-40 ... +80 °C	-40 ... +80 °C

Operation in an explosive dust atmosphere:

Permitted ambient or process temperature range: -40 ... +80 °C

In Zone 20, Zone 20/21:

Maximum surface temperature = Ambient or process temperature +54 K = +134 °C

DE

EN

FR

ES

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Documentation complémentaire:

- Notices de mise en service VEGAPULS C 21, C 22, C 23
- Certificat de contrôle UE de type KIWA 19 ATEX 0028 X (Document ID: 62415)
- Déclaration de conformité UE (ID du document : 61787)

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ES	Las indicaciones de seguridad presentes están disponibles en la zona de descarga de www.vega.com de forma estándar en los idiomas inglés, francés y español. VEGA pone a disposición otros idiomas de la UE cuando son requeridos.

1 Validité

Ces consignes de sécurité sont valables pour les VEGAPULS C 21, C 22, C 23 des séries :

- VEGAPULS C 21
- VEGAPULS C 22
- VEGAPULS C 23

Avec les versions électroniques :

- H - Deux fils 4 ... 20 mA/HART

Conformément au certificat de contrôle de type UE KIWA 19 ATEX 0028 X (numéro du certificat sur la plaque signalétique) et pour tous les appareils portant le numéro de la consigne de sécurité 62412.

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 60079-11: 2012, sécurité intrinsèque "i"
- EN 60079-26: 2015, Moyens d'exploitation avec niveau de protection du matériel (EPL) Ga

Mode de protection :

- II 1G, 1/2G Ex ia IIC T4 ... T1 Ga, Ga/Gb
- II 1D, 1/2D Ex ia IIIC T₂₀₀ 134 °C Da, Da/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

Les VEGAPULS C 21, C 22, C 23 en mode de protection sécurité intrinsèque „i” servent à la détection de la distance entre une surface de produit et le capteur au moyen d'ondes électromagnétiques à haute fréquence dans la plage de GHz.

L'électronique utilise le temps de propagation des signaux réfléchis par la surface du produit pour calculer la distance par rapport à la surface du produit.

Les VEGAPULS C 21, C 22, C 23 sont composés d'un boîtier de l'électronique, d'un élément de raccord process et d'un élément de mesure ou d'une antenne.

Les VEGAPULS C 21, C 22, C 23 sont appropriés pour l'utilisation dans des atmosphères explosives de toutes les matières inflammables des groupes d'explosion IIA, IIB, IIC et IIIA, IIIB et IIIC.

Les VEGAPULS C 21, C 22, C 23 sont appropriés pour les applications nécessitant un matériel de la catégorie 1G (EPL Ga) ou 1/2G (EPL Ga/Gb).

Les VEGAPULS C 21, C 22, C 23 sont appropriés pour les applications nécessitant un matériel de la catégorie 1D (EPL Da) ou 1/2D (EPL Da/Db).

4 Domaine d'application

Catégorie 1G ou 1D (matériel EPL Ga- ou EPL Da)

Les VEGAPULS C 21, C 22, C 23 avec élément de fixation mécanique sont installés dans l'atmosphère explosible de la zone 0 ou de la zone 20 nécessitant un matériel de la catégorie 1G (EPL Ga) ou 1D (EPL Da).

Catégorie 1/2G ou 1/2D (matériel EPL Ga/Gb- ou EPL Da/Db)

Les VEGAPULS C 21, C 22, C 23 avec l'élément de fixation mécanique sont installés dans une zone explosible de niveau 1 ou de niveau 21 qui requièrent un matériel de la catégorie 2G ou 2D (EPL Gb ou 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 2G ou 2D (EPL Gb ou EPL Db). Le système de mesure du capteur est installé dans la zone explosible de niveau 0 ou de niveau 20 qui requiert un matériel de la catégorie 1G ou 1D (EPL Ga ou EPL Da).

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

L'aperçu ci-après liste toutes les caractéristiques spécifiques au VEGAPULS C 21, C 22, C 23 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.

6 Remarques supplémentaires pour une exploitation sûre

- Pour les pressions de processus en dehors des conditions atmosphériques courantes entre 80 kPa (0,8 bar) et 110 kPa (1,1 bar), des exigences complémentaires peuvent s'appliquer.

Conditions de raccordement

- La ligne de raccordement est appropriée pour une plage de température de service de -40 ... +80 °C en cas de pose fixe. La température sur le câble de raccordement peut être de +90 °C pendant max. 10 000 heures de service.
- La ligne de raccordement est appropriée pour une plage de température de service de -25 ... +80 °C en cas de pose flexible. La température sur le câble de raccordement peut être de +90 °C pendant max. 10 000 heures de service.
- Si besoin est, une protection appropriée contre les surtensions peut être installée en amont du VEGAPULS C 21, C 22, C 23

7 Instructions importantes pour le montage et l'entretien

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

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.

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

Les avertissements sur la plaque signalétique indiquent le danger :

- WARNING - POTENTIAL ELECTROSTATIC CHARGING HAZARD – SEE INSTRUCTIONS
- AVERTISSEMENT – DANGER POTENTIEL DE CHARGES ELECTROSTATIQUES – VOIR INSTRUCTION
- 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 Caractéristiques électriques

Circuit d'alimentation et signal :	
Toron brun [+]	En mode de protection sécurité intrinsèque Ex ia IIC, IIIC
Toron bleu [-]	
Pour le raccordement à un circuit courant de sécurité intrinsèque certifié.	
$U_i \leq 30$ V DC	
$I_i \leq 131$ mA	
$P_i \leq 983$ mW	
La capacité intérieure utile C_i ou l'inductivité L_i doit être calculée :	
$L_i = 0,65 \mu\text{H/m}$ - Longueur du câble en mètres	
$C_i = 180 \text{ pF/m}$ · Longueur du câble en mètres	
Le blindage (noir) doit être relié à la terre côté alimentation.	

10 Caractéristiques thermiques

Exploitation dans une atmosphère gazeuse explosible :

Classe de température	Plage de température process admissible sur l'antenne en zone 0 (EPL Ga)	Plage de température ambiante admissible sur le boîtier de l'électronique en zone 0 (EPL Ga)
T4 ... T1	-40 ... +80 °C	-40 ... +80 °C

Exploitation dans une atmosphère poussiéreuse explosible :

Plage de température ambiante ou process autorisée : -40 ... +80 °C

En zone 20, zone 20/21:

Température de surface maximale = température ambiante ou process +54 K = +134 °C

DE**EN****FR****ES**

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Documentación adicional:

- Manuales de instrucciones VEGAPULS C 21, C 22, C 23
- Certificado de control de tipos UE KIWA 19 ATEX 0028 X (Document ID: 62415)
- Declaración de conformidad EU (Document ID: 61787)

Estado de redacción: 2023-04-27

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
ES	Instrucciones de seguridad para el empleo en áreas con riesgo de explosión
PT	Normas de segurança para utilização em zonas sujeitas a explosão
NL	Veiligheidsaanwijzingen voor gebruik op plaatsen waar ontploffingsgevaar kan heersen
SV	Säkerhetsanvisningar för användning i explosionsfarliga områden
DA	Sikkerhedsforskrifter til anvendelse i explosionsfarlig atmosfære
FI	Turvallisuusohjeet räjähdysvaarallisissa tiloissa käyttöä varten
EL	Υποδείξεις ασφαλείας για τη χρησιμοποίηση σε περιοχές που υπάρχει κίνδυνος έκρηξης

DE	Die vorliegenden Sicherheitshinweise sind im Download unter www.vega.com standardmäßig in den Sprachen deutsch, englisch, französisch und spanisch verfügbar. Weitere EU-Landes-sprachen stellt VEGA nach Anforderungen zur Verfügung.
EN	These safety instructions are available as a standard feature in the download area under www.vega.com in the languages German, English, French and Spanish. Further EU languages will be made available by VEGA upon request.
FR	Les présentes consignes de sécurité sont disponibles au téléchargement sous www.vega.com en standard en allemand, en anglais, en français et en espagnol. VEGA met à disposition d'autres langues de l'Union Européenne selon les exigences.
ES	Las indicaciones de seguridad presentes están disponibles en la zona de descarga de www.vega.com de forma estándar en los idiomas inglés, francés y español. VEGA pone a disposición otros idiomas de la UE cuando son requeridos.

1 Vigencia

Las presentes instrucciones de seguridad son validas para los VEGAPULS C 21, C 22, C 23 de la serie:

- VEGAPULS C 21
- VEGAPULS C 22
- VEGAPULS C 23

Con las versiones electrónicas:

- H - De dos hilos 4 ... 20 mA/HART

Según el certificado de examen de tipo UE KIWA 19 ATEX 0028 X (Número de certificación en la placa de tipos) y para todos los instrumentos con la instrucción de seguridad 62412.

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 60079-11: 2012, Seguridad intrínseca "i"
- EN 60079-26: 2015, Equipamiento con nivel de protección de equipos (EPL) Ga

Símbolo de protección e:

- II 1G, 1/2G Ex ia IIC T4 ... T1 Ga, Ga/Gb
- II 1D, 1/2D Ex ia IIIC T₂₀₀ 134 °C Da, Da/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 características del instrumento o
- Entrar el número de serie manualmente en el App

3 Informaciones generales

El VEGAPULS C 21, C 22, C 23 en el tipo de protección de seguridad intrínseca "i" sirve para la detección de la distancia entre la superficie de un producto y el sensor por medio de ondas electromagnéticas de alta frecuencia en el rango de GHz.

La electrónica utiliza el tiempo de recorrido de las señales reflejadas por la superficie del producto almacenado para calcular la distancia hasta dicha superficie.

Los VEGAPULS C 21, C 22, C 23 se componen de una carcasa para la electrónica, un elemento de conexión a proceso y una sonda de medición o una antena.

Los VEGAPULS C 21, C 22, C 23 son apropiados para el empleo en una atmósfera explosiva de todas las sustancias inflamables de los grupos de explosión IIA, IIB, IIC y IIIA, IIIB, IIIC.

Los VEGAPULS C 21, C 22, C 23 son apropiados para aplicaciones que requieren medios de producción de la categoría 1G (EPL Ga) ó 1/2G (EPL Ga/Gb).

Los VEGAPULS C 21, C 22, C 23 son apropiados para aplicaciones que requieren medios de producción de la categoría 1D (EPL Da) ó 1/2D (EPL Da/Db).

4 Rango de aplicación

Categoría 1G ó 1D (equipos EPL Ga ó EPL Da)

Los VEGAPULS C 21, C 22, C 23 con el elemento de fijación mecánica se instalan en el área con riesgo de explosión de la zona 0 ó de la zona 20 que requieren un medio de producción en la categoría 1G (EPL Ga) ó 1D (EPL Da).

Categoría 1/2G ó 1/2D (equipos EPL Ga/Gb ó EPL Da/Db)

El VEGAPULS C 21, C 22, C 23 con el elemento de fijación mecánico se instala en la zona potencialmente explosiva de las zonas 1 o 21, que requieren equipos categoría 2G o 2D (EPL Gb o EPL Db). El elemento de fijación mecánico, elemento de conexión al proceso, se instala en la pared divisoria que separa las áreas donde se requieren equipos categoría 2G o 2D (EPL Gb o EPL Db) o 1G o 1D (EPL Ga o EPL Da). El sistema de medición del sensor se instala en áreas peligrosas de la zona 0 o zona 20 que requieren equipo categoría 1G o 1D (EPL Ga o EPL Da).

5 Condiciones de operación especiales (Identificación "X")

La siguiente tabla muestra todas las propiedades especiales del VEGAPULS C 21, C 22, C 23 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.

6 Información adicional para un funcionamiento seguro

- Para presiones de proceso fuera de las condiciones atmosféricas de 80 kPa (0,8 bar) hasta 110 kPa (1,1 bar) pueden aplicarse otros requisitos.

Condiciones de conexión

- En caso de montaje fijo, el cable de conexión es adecuado para un rango de temperatura de funcionamiento de -40 ... +80 °C. Para un máximo de 10.000 horas de servicio, la temperatura en el cable de conexión puede ser de +90 °C.
- En caso de montaje flexible, el cable de conexión es adecuado para un rango de temperatura de funcionamiento de -25 ... +80 °C. Para un máximo de 10.000 horas de servicio, la temperatura en el cable de conexión puede ser de +90 °C.
- En caso necesario se puede conectar una protección contra sobretensiones adecuada previa al VEGAPULS C 21, C 22, C 23

7 Indicaciones importantes para el montaje y mantenimiento

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

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.

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

Las indicaciones de advertencia en la placa de características indican el peligro:

- WARNING - POTENTIAL ELECTROSTATIC CHARGING HAZARD – SEE INSTRUCTIONS
- AVERTISSEMENT – DANGER POTENTIEL DE CHARGES ELECTROSTATIQUES – VOIR INSTRUCTION

- 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 Datos eléctricos

Circuito de alimentación y señal.	
Marrón hilo [+] Azul hilo [-]	En tipo de protección e seguridad intrínseca Ex ia IIC, IIIC
	Para la conexión a un circuito con seguridad intrínseca certificado. $U_i \leq 30$ V DC $I_i \leq 131$ mA $P_i \leq 983$ mW
	La capacidad C_i , o inductividad L_i debe calcularse. $L_i = 0,65$ μ H/m · Longitud del cable en metros $C_i = 180$ pF/m · Longitud del cable en metros
El apantallamiento (negro) debe estar conectado a tierra en el lado de la alimentación.	

10 Datos térmicos

Funcionamiento en atmósferas de gas explosivas:

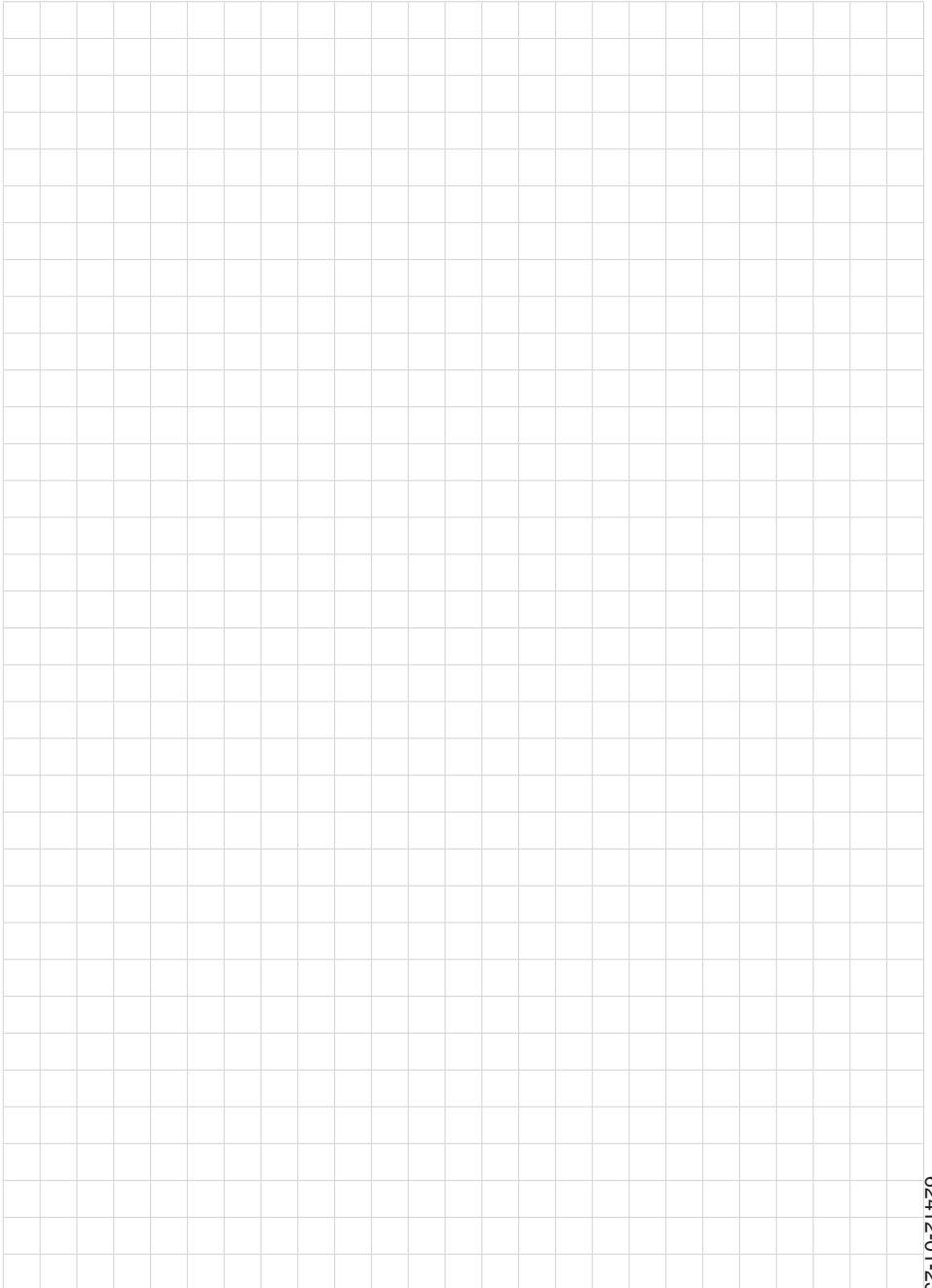
Clase de temperatura	Rango de temperatura de proceso permisible en la antena en la zona 0 (EPL Ga)	Rango de temperatura ambiente permisible en la carcasa de la electrónica en la zona 0 (EPL Ga)
T4 ... T1	-40 ... +80 °C	-40 ... +80 °C

Funcionamiento en atmósferas de polvo explosivas:

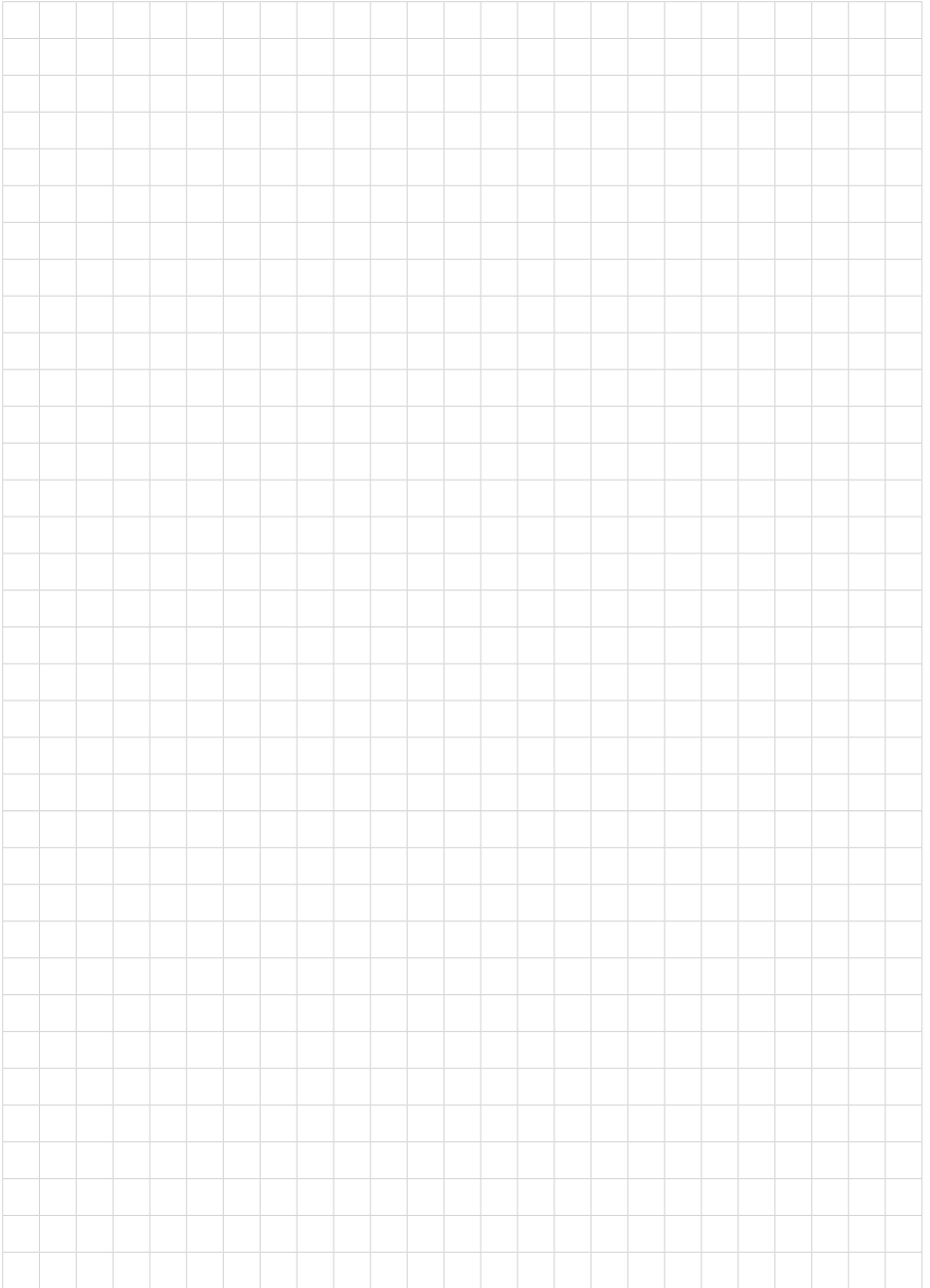
Rango de temperatura ambiente o de proceso permitido: -40 ... +80 °C

En Zona 20, Zona 20/21:

Temperatura superficial máxima = temperatura ambiente o de proceso +54 K = +134 °C



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Die Angaben über Lieferumfang, Anwendung, Einsatz und Betriebsbedingungen der Sensoren und Auswertsysteme entsprechen den zum Zeitpunkt der Drucklegung vorhandenen Kenntnissen.
Änderungen vorbehalten

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ATEX



Safety instructions

VEGAPULS C 21, C 22, C 23

Intrinsic safety "i"

Two-wire 4 ... 20 mA/HART



UK
CA 0891



Document ID: 62412

VEGA

UKEX

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Supplementary documentation:

- Operating Instructions VEGAPULS C 21, C 22, C 23
- UK-Type Examination Certificate UL21 UKEX2284X (Document ID: 66421)
- UK Declaration of Conformity (Document ID: 66474)

Editing status: 2021-10-06

1 Area of applicability

These safety instructions apply to the VEGAPULS C 21, C 22, C 23 of type series:

- VEGAPULS C 21
- VEGAPULS C 22
- VEGAPULS C 23

With the electronics versions:

- H - Two-wire 4 ... 20 mA/HART

According to UK Type Examination Certificate UL21UKEX2284X (certificate number on the type label) and for all instruments with safety instruction 62412.

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

Standards:

- EN 60079-0: 2018, General Requirements
- EN 60079-11: 2012, Intrinsic safety "i"
- EN 60079-26: 2015, Equipment with equipment protection level (EPL) Ga

Type of protection marking:

- II 1G, 1/2G Ex ia IIC T4 ... T1 Ga, Ga/Gb
- II 1D, 1/2D Ex ia IIIC T134 °C Da, Da/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

The VEGAPULS C 21, C 22, C 23 in ignition protection type intrinsic safety "i" are used for detection of the distance between medium surface and sensor by means of high frequency, electromagnetic waves in the GHz range.

The electronics uses the running time of the signals reflected by the medium surface to calculate the distance to the medium surface.

The VEGAPULS C 21, C 22, C 23 consist of an electronics housing, a process connection element and a sensor or an antenna.

The VEGAPULS C 21, C 22, C 23 are suitable for applications in hazardous atmospheres of all combustible materials of explosion groups IIA, IIB, IIC and IIIA, IIIB, IIIC.

The VEGAPULS C 21, C 22, C 23 are suitable for applications requiring category 1G (EPL Ga) or 1/2G (EPL Ga/Gb) instruments.

The VEGAPULS C 21, C 22, C 23 are suitable for applications requiring category 1D (EPL Da) or 1/2D (EPL Da/Db) instruments.

4 Application area

Category 1G resp. 1D (EPL Ga resp. EPL Da instruments)

The VEGAPULS C 21, C 22, C 23 with the mechanical fixing element are installed in hazardous areas of zone 0 or zone 20 requiring category 1G (EPL Ga) resp. 1D (EPL Da) instruments.

Category 1/2G resp. 1/2D (EPL Ga/Gb resp. EPL Da/Db instruments)

The VEGAPULS C 21, C 22, C 23 with mechanical fixing element are installed in hazardous areas of zone 1 resp. zone 21 requiring instruments of category 2G resp. 2D (EPL Gb resp. EPL Db). The mechanical fixing element, process connection element is installed in the separating wall, which separates areas requiring instruments of category 2G resp. 2D (EPL Gb resp. EPL Db) or 1G resp. 1D (EPL Ga resp. EPL Da). The sensor measuring system is installed in hazardous areas of zone 0 resp. zone 20 requiring instruments of category 1G resp. 1D (EPL Ga resp. EPL Da).

5 Specific conditions of use ("X" identification)

The following overview is listing all special properties of VEGAPULS C 21, C 22, C 23, 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.

6 Additional instructions for safe operation

- For process pressures outside the standard atmospheric conditions of 80 kPa (0.8 bar) to 110 kPa (1.1 bar) additional requirements can be valid.

Connection conditions

- For fixed installation, the connecting cable is suitable for an operating temperature range of -40 ... +80 °C. The temperature at the connection cable may be +90 °C for max. 10000 operating hours.
- For flexible installation, the connecting cable is suitable for an operating temperature range of -25 ... +80 °C. The temperature at the connection cable may be +90 °C for max. 10000 operating hours.
- If necessary, a suitable overvoltage arrester can be connected in front of the VEGAPULS C 21, C 22, C 23

7 Important information for mounting and maintenance

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

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.

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

The warning on the type label indicates danger:

- **WARNING - POTENTIAL ELECTROSTATIC CHARGING HAZARD – SEE INSTRUCTIONS**
- **AVERTISSEMENT – DANGER POTENTIEL DE CHARGES ELECTROSTATIQUES – VOIR INSTRUCTION**
- For media with a conductivity smaller than 10^{-6} 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 Electrical data

Supply and signal circuit:	
Brown strand [+] Blue strand [-]	In type of protection intrinsic safety Ex ia IIC, IIIC For connection to a certified, intrinsically safe circuit. $U_i \leq 30 \text{ V DC}$ $I_i \leq 131 \text{ mA}$ $P_i \leq 983 \text{ mW}$ The effective inner capacitances C_i or inductances L_i must be calculated: $L_i = 0.65 \mu\text{H/m} \cdot \text{Cable length in meters}$ $C_i = 180 \text{ pF/m} \cdot \text{Cable length in meters}$
The shielding (black) must be earthed on the supply side.	

10 Thermal data

Operation in an explosive gas atmosphere:

Temperature class	Permissible process temperature range on the antenna in zone 0 (EPL Ga)	Permissible ambient temperature range on the electronics housing in zone 0 (EPL Ga)
T4 ... T1	-40 ... +80 °C	-40 ... +80 °C

Operation in an explosive dust atmosphere:

Permitted ambient or process temperature range: -40 ... +80 °C

In Zone 20, Zone 20/21:

Maximum surface temperature = Ambient or process temperature +54 K = +134 °C



Printing date:

VEGA

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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UKEX

Safety instructions

VEGAPULS C 21, C 22, C 23

Intrinsic safety "i"

Two-wire 4 ... 20 mA/HART



Document ID: 62412



VEGA

IECEX

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Supplementary documentation:

- Operating Instructions VEGAPULS C 21, C 22, C 23
- Certificate of Conformity IECEx KIWA 19.0015 X (Document ID: 62416)

Editing status: 2023-04-27

1 Area of applicability

These safety instructions apply to the VEGAPULS C 21, C 22, C 23 of type series:

- VEGAPULS C 21
- VEGAPULS C 22
- VEGAPULS C 23

With the electronics versions:

- H - Two-wire 4 ... 20 mA/HART

According to Certificate of Conformity IECEx KIWA 19.0015 X (certificate number on the type label) and for all instruments with safety instruction 62412.

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

Standards:

- IEC 60079-0: 2017, General Requirements
- IEC 60079-11: 2011, Intrinsic safety "i"
- IEC 60079-26: 2014-10, Equipment with equipment protection level (EPL) Ga

Type of protection marking:

- Ex ia IIC T4 ... T1 Ga, Ga/Gb
- Ex ia IIIC T₂₀₀ 134 °C Da, Da/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

The VEGAPULS C 21, C 22, C 23 in ignition protection type intrinsic safety "i" are used for detection of the distance between medium surface and sensor by means of high frequency, electromagnetic waves in the GHz range.

The electronics uses the running time of the signals reflected by the medium surface to calculate the distance to the medium surface.

The VEGAPULS C 21, C 22, C 23 consist of an electronics housing, a process connection element and a sensor or an antenna.

The VEGAPULS C 21, C 22, C 23 are suitable for applications in hazardous atmospheres of all combustible materials of explosion groups IIA, IIB, IIC and IIIA, IIIB, IIIC.

The VEGAPULS C 21, C 22, C 23 are suitable for applications requiring EPL Ga or EPL Ga/Gb instruments.

The VEGAPULS C 21, C 22, C 23 are suitable for applications requiring EPL Da or EPL Da/Db instruments.

4 Application area

EPL Ga resp. EPL Da instrument

The VEGAPULS C 21, C 22, C 23 with the mechanical fixing element are installed in hazardous areas of zone 0 resp. zone 20 requiring EPL Ga resp. EPL Da instruments.

EPL Ga/Gb resp. EPL Da/Db instrument

The VEGAPULS C 21, C 22, C 23 with mechanical fixing element are installed in hazardous areas of zone 1 resp. zone 21 requiring EPL Gb resp. EPL Db instruments. The mechanical fixing element, process connection element is installed in the separating wall, which separates areas requiring EPL Gb resp. EPL Db or EPL Ga- resp. EPL Da instruments. The sensor measuring system is installed in hazardous areas of zone 0 resp. zone 20 requiring EPL Ga resp. EPL Da instruments.

5 Specific conditions of use ("X" identification)

The following overview is listing all special properties of VEGAPULS C 21, C 22, C 23, 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.

6 Additional instructions for safe operation

- For process pressures outside the standard atmospheric conditions of 80 kPa (0.8 bar) to 110 kPa (1.1 bar) additional requirements can be valid.

Connection conditions

- For fixed installation, the connecting cable is suitable for an operating temperature range of -40 ... +80 °C. The temperature at the connection cable may be +90 °C for max. 10000 operating hours.
- For flexible installation, the connecting cable is suitable for an operating temperature range of -25 ... +80 °C. The temperature at the connection cable may be +90 °C for max. 10000 operating hours.
- If necessary, a suitable overvoltage arrester can be connected in front of the VEGAPULS C 21, C 22, C 23

7 Important information for mounting and maintenance

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

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.

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

The warning on the type label indicates danger:

- **WARNING - POTENTIAL ELECTROSTATIC CHARGING HAZARD – SEE INSTRUCTIONS**
- **AVERTISSEMENT – DANGER POTENTIEL DE CHARGES ELECTROSTATIQUES – VOIR INSTRUCTION**
- 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 Electrical data

Supply and signal circuit:	
Brown strand [+] Blue strand [-]	In type of protection intrinsic safety Ex ia IIC, IIIC For connection to a certified, intrinsically safe circuit. $U_i \leq 30 \text{ V DC}$ $I_i \leq 131 \text{ mA}$ $P_i \leq 983 \text{ mW}$ The effective inner capacitances C_i or inductances L_i must be calculated: $L_i = 0.65 \mu\text{H/m} \cdot \text{Cable length in meters}$ $C_i = 180 \text{ pF/m} \cdot \text{Cable length in meters}$
The shielding (black) must be earthed on the supply side.	

10 Thermal data

Operation in an explosive gas atmosphere:

Temperature class	Permissible process temperature range on the antenna in zone 0 (EPL Ga)	Permissible ambient temperature range on the electronics housing in zone 0 (EPL Ga)
T4 ... T1	-40 ... +80 °C	-40 ... +80 °C

Operation in an explosive dust atmosphere:

Permitted ambient or process temperature range: -40 ... +80 °C

In Zone 20, Zone 20/21:

Maximum surface temperature = Ambient or process temperature +54 K = +134 °C

A large grid of graph paper for taking notes, consisting of 20 columns and 30 rows of small squares.

Printing date:

VEGA

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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IECEX



Safety instructions

VEGAPULS C 21, C 22, C 23

Intrinsic safety "i"

Two-wire 4 ... 20 mA/HART



Document ID: 62412

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Supplementary documentation:

- Operating Instructions VEGAPULS C 21, C 22, C 23
- Certificate of Conformity FM20CA0003X, FM20US0007X (Document ID: 62417)

Editing status: 2019-10-21

1 Area of applicability

These safety instructions apply to the VEGAPULS C 21, C 22, C 23 of type series:

- VEGAPULS C 21
- VEGAPULS C 22
- VEGAPULS C 23

With the electronics versions:

- H - Two-wire 4 ... 20 mA/HART

According to Certificate of Conformity FM20CA0003X, FM20US0007X (certificate number on the type label) and for all instruments with safety instruction 62412.

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

Type of protection marking:

- Intrinsic safe for CI I, Div1, Gp ABCD, CI II, Div1 Gp EFG, CI III T4
- Ex ia IIC T4 Ga, Ga/Gb
- Ex ia IIIC T134 °C Da, Da/Db
- CI I, Zn 0, 0/1, AEx ia IIC T4 Ga, Ga/Gb
- Zn 20, 20/21, AEx ia IIIC T134 °C Da, Da/Db

2 Device configuration/-properties

The detailed device configurations can be retrieved using the serial number search on our home-page.

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

The VEGAPULS C 21, C 22, C 23 in ignition protection type intrinsic safety "i" are used for detection of the distance between product surface and sensor by means of high frequency, electromagnetic waves in the GHz range.

The electronics uses the running time of the signals reflected by the product surface to calculate the distance to the product surface.

The VEGAPULS C 21, C 22, C 23 consist of an electronics housing, a process connection element and a sensor or an antenna.

Zone application:

The VEGAPULS C 21, C 22, C 23 are suitable for applications in hazardous atmospheres of all combustible materials of explosion groups IIA, IIB, IIC and IIIA, IIIB, IIIC.

The VEGAPULS C 21, C 22, C 23 are suitable for applications requiring EPL Ga or EPL Ga/Gb instruments.

The VEGAPULS C 21, C 22, C 23 are suitable for applications requiring EPL Da or EPL Da/Db instruments.

Division application:

The VEGAPULS C 21, C 22, C 23 are suitable for applications in hazardous atmospheres of all

combustible materials of explosion groups A, B, C, D and dust groups E, F, G.

The VEGAPULS C 21, C 22, C 23 are suitable for applications requiring Division 1 instruments.

4 Application area

EPL Ga resp. EPL Da instrument

The VEGAPULS C 21, C 22, C 23 with the mechanical fixing element are installed in hazardous areas of zone 0 resp. zone 20 requiring EPL Ga resp. EPL Da instruments.

EPL Ga/Gb resp. EPL Da/Db instrument

The VEGAPULS C 21, C 22, C 23 with mechanical fixing element are installed in hazardous areas of zone 1 resp. zone 21 requiring EPL Gb resp. EPL Db instruments. The mechanical fixing element, process connection element is installed in the separating wall, which separates areas requiring EPL Gb resp. EPL Db or EPL Ga- resp. EPL Da instruments. The sensor measuring system is installed in hazardous areas of zone 0 resp. zone 20 requiring EPL Ga resp. EPL Da instruments.

Division 1 instruments

The VEGAPULS C 21, C 22, C 23 with the mechanical fixing element may be installed in dust or gas explosive areas requiring Division 1 instruments.

5 Specific conditions of use ("X" identification)

The following overview is listing all special properties of VEGAPULS C 21, C 22, C 23, 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.

6 Additional instructions for safe operation

- For process pressures outside the standard atmospheric conditions of 80 kPa (0.8 bar) to 110 kPa (1.1 bar) additional requirements can be valid.

Connection conditions

- For fixed installation, the connecting cable is suitable for an operating temperature range of -40 ... +80 °C. The temperature at the connection cable may be +90 °C for max. 10000 operating hours.
- For flexible installation, the connecting cable is suitable for an operating temperature range of -25 ... +80 °C. The temperature at the connection cable may be +90 °C for max. 10000 operating hours.
- If necessary, a suitable overvoltage arrester can be connected in front of the VEGAPULS C 21, C 22, C 23

7 Important information for mounting and maintenance

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 CEC or NEC
- 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
- Modifications must only be carried out by employees authorized by VEGA company
- Use only approved spare parts

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.

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

The warning on the type label indicates danger:

- WARNING - POTENTIAL ELECTROSTATIC CHARGING HAZARD – SEE INSTRUCTIONS
- AVERTISSEMENT – DANGER POTENTIEL DE CHARGES ELECTROSTATIQUES – VOIR INSTRUCTION
- 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 Electrical data

Supply and signal circuit:	
Brown strand [+] Blue strand [-]	In type of protection intrinsic safety Ex ia IIC, IIIC For connection to a certified, intrinsically safe circuit. $U_i \leq 30 \text{ V DC}$ $I_i \leq 131 \text{ mA}$ $P_i \leq 983 \text{ mW}$ The effective inner capacitances C_i or inductances L_i must be calculated: $L_i = 0.65 \text{ } \mu\text{H/m} \cdot \text{Cable length in meters}$ $C_i = 180 \text{ pF/m} \cdot \text{Cable length in meters}$
The shielding (black) must be earthed on the supply side.	

10 Thermal data

Operation in an explosive gas atmosphere:

Temperature class	Permissible process temperature range at the antenna in Zone 0 (EPL Ga) or in Division 1	Permissible ambient temperature range on the electronics housing in zone 0 (EPL Ga) or in Division 1
T4 ... T1	-40 ... +80 °C	-40 ... +80 °C

Operation in an explosive dust atmosphere:

Permitted ambient or process temperature range: -40 ... +80 °C

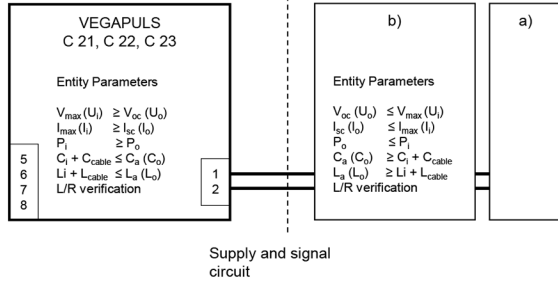
In Zone 20, Zone 20/21 or in Division 1:

Maximum surface temperature = Ambient or process temperature +54 K = +134 °C

11 Installation Control Drawing

Class I, Division 1, Groups A, B, C, D
 Class II, III Division 1, Groups E, F, G
 Class I, Zone 0, Group IIC
 Zone 20, Group IIIC

Unclassified / Ordinary Location or
 Class I, Division 2, Groups A, B, C, D or
 Class I, Zone 2, Group IIC



a) Control Room ($U_m \leq 250$ V)
 b) Associated Apparatus

NOTES:

- The Entity Concept allows the interconnection of suitable approved Intrinsically safe devices with entity parameters not specifically examined in combination as a system when:
 - U_o or V_{oc} or $V_t \leq U_i$ or V_{max}
 - I_o or I_{sc} or $I_t \leq I_i$ or I_{max}
 - $P_o \leq P_i$
 - C_a or $C_o \geq C_i + C_{cable}$
 - L_a or $L_o \geq L_i + L_{cable}$
- Control equipment connected to the Associated Apparatus shall not use or generate more than $250 V_{rms}$ or V_{dc} .
- Installation should be in accordance with ANSI/ISA-RP12.06.01 "Intrinsic Safety Wiring Methods for Hazardous (Classified) Locations Instrumentation" and the Canadian Electrical Code for Canada or the National Electrical Code for the US.
- The configuration of associated Apparatus shall be approved under Entity Concept.
- Associated Apparatus manufacturer's installation control drawing shall be followed when installing this equipment.
- The VEGAPULS C2x are approved for Class I, Zone 0 and Division 1 applications. If connecting [Ex ib]/[AEx ib] Associated Apparatus to the VEGAPULS C 2x, the above system is only suitable for Class 1, Zone 1, or Division 2 hazardous (classified) locations, and is not suitable for Class I, Zone 0, or Division 1 hazardous (classified) locations.
- When cable parameters are unknown, the following may be used: Capacitance = 200 pF/m (60 pF/ft); Inductance = 0.66 μ H/m (0.20 μ H/ft)
- Resistance between intrinsically safe ground and earth ground must be less than one Ohm.
- No revision to drawing without prior Agency Approval.
- Warning: Substitution of components may impair suitability for intrinsic safety and hazardous locations.

Printing date:

VEGA

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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Safety instructions

VEGAPULS C 21, C 22, C 23

Intrinsic safety "i"

Two-wire 4 ... 20 mA/HART



Document ID: 62412

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Supplementary documentation:

- Operating Instructions VEGAPULS C 21, C 22, C 23
- Certificate of Conformity CSA 19CA80000123X (Document ID: 62418)

Editing status: 2019-10-21

1 Area of applicability

These safety instructions apply to the VEGAPULS C 21, C 22, C 23 of type series:

- VEGAPULS C 21
- VEGAPULS C 22
- VEGAPULS C 23

With the electronics versions:

- H - Two-wire 4 ... 20 mA/HART

According to Certificate of Conformity CSA 19CA80000123X (certificate number on the type label) and for all instruments with safety instruction 62412.

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

Type of protection marking:

- Intrinsic safe for CI I, Div1, Gp ABCD, CI II, Div1 Gp EFG, CI III T4
- Ex ia IIC T4 Ga, Ga/Gb
- Ex ia IIIC T134 °C Da, Da/Db
- CI I, Zn 0, 0/1, AEx ia IIC T4 Ga, Ga/Gb
- Zn 20, 20/21, AEx ia IIIC T134 °C Da, Da/Db

2 Device configuration/-properties

The detailed device configurations can be retrieved using the serial number search on our home-page.

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

The VEGAPULS C 21, C 22, C 23 in ignition protection type intrinsic safety "i" are used for detection of the distance between medium surface and sensor by means of high frequency, electromagnetic waves in the GHz range.

The electronics uses the running time of the signals reflected by the medium surface to calculate the distance to the medium surface.

The VEGAPULS C 21, C 22, C 23 consist of an electronics housing, a process connection element and a sensor or an antenna.

Zone application:

The VEGAPULS C 21, C 22, C 23 are suitable for applications in hazardous atmospheres of all combustible materials of explosion groups IIA, IIB, IIC and IIIA, IIIB, IIIC.

The VEGAPULS C 21, C 22, C 23 are suitable for applications requiring EPL Ga or EPL Ga/Gb instruments.

The VEGAPULS C 21, C 22, C 23 are suitable for applications requiring EPL Da or EPL Da/Db instruments.

Division application:

The VEGAPULS C 21, C 22, C 23 are suitable for applications in hazardous atmospheres of all

combustible materials of explosion groups A, B, C, D and dust groups E, F, G.

The VEGAPULS C 21, C 22, C 23 are suitable for applications requiring Division 1 instruments.

4 Application area

EPL Ga resp. EPL Da instrument

The VEGAPULS C 21, C 22, C 23 with the mechanical fixing element are installed in hazardous areas of zone 0 resp. zone 20 requiring EPL Ga resp. EPL Da instruments.

EPL Ga/Gb resp. EPL Da/Db instrument

The VEGAPULS C 21, C 22, C 23 with mechanical fixing element are installed in hazardous areas of zone 1 resp. zone 21 requiring EPL Gb resp. EPL Db instruments. The mechanical fixing element, process connection element is installed in the separating wall, which separates areas requiring EPL Gb resp. EPL Db or EPL Ga- resp. EPL Da instruments. The sensor measuring system is installed in hazardous areas of zone 0 resp. zone 20 requiring EPL Ga resp. EPL Da instruments.

Division 1 instruments

The VEGAPULS C 21, C 22, C 23 with the mechanical fixing element may be installed in dust or gas explosive areas requiring Division 1 instruments.

5 Specific conditions of use ("X" identification)

The following overview is listing all special properties of VEGAPULS C 21, C 22, C 23, 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.

6 Additional instructions for safe operation

- For process pressures outside the standard atmospheric conditions of 80 kPa (0.8 bar) to 110 kPa (1.1 bar) additional requirements can be valid.

Connection conditions

- For fixed installation, the connecting cable is suitable for an operating temperature range of -40 ... +80 °C. The temperature at the connection cable may be +90 °C for max. 10000 operating hours.
- For flexible installation, the connecting cable is suitable for an operating temperature range of -25 ... +80 °C. The temperature at the connection cable may be +90 °C for max. 10000 operating hours.
- If necessary, a suitable overvoltage arrester can be connected in front of the VEGAPULS C 21, C 22, C 23

7 Important information for mounting and maintenance

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 CEC or NEC
- 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

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.

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

The warning on the type label indicates danger:

- WARNING - POTENTIAL ELECTROSTATIC CHARGING HAZARD – SEE INSTRUCTIONS
- AVERTISSEMENT – DANGER POTENTIEL DE CHARGES ELECTROSTATIQUES – VOIR INSTRUCTION
- 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 Electrical data

Supply and signal circuit:	
Brown strand [+] Blue strand [-]	In type of protection intrinsic safety Ex ia IIC, IIIC For connection to a certified, intrinsically safe circuit. $U_i \leq 30 \text{ V DC}$ $I_i \leq 131 \text{ mA}$ $P_i \leq 983 \text{ mW}$ The effective inner capacitances C_i or inductances L_i must be calculated: $L_i = 0.65 \mu\text{H/m} \cdot \text{Cable length in meters}$ $C_i = 180 \text{ pF/m} \cdot \text{Cable length in meters}$
The shielding (black) must be earthed on the supply side.	

10 Thermal data

Operation in an explosive gas atmosphere:

Temperature class	Permissible process temperature range at the antenna in Zone 0 (EPL Ga) or in Division 1	Permissible ambient temperature range on the electronics housing in zone 0 (EPL Ga) or in Division 1
T4 ... T1	-40 ... +80 °C	-40 ... +80 °C

Operation in an explosive dust atmosphere:

Permitted ambient or process temperature range: -40 ... +80 °C

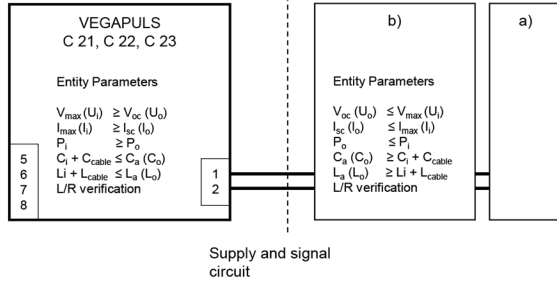
In Zone 20, Zone 20/21 or in Division 1:

Maximum surface temperature = Ambient or process temperature +54 K = +134 °C

11 Installation Control Drawing

Class I, Division 1, Groups A, B, C, D
 Class II, III Division 1, Groups E, F, G
 Class I, Zone 0, Group IIC
 Zone 20, Group IIIC

Unclassified / Ordinary Location or
 Class I, Division 2, Groups A, B, C, D or
 Class I, Zone 2, Group IIC



a) Control Room ($U_m \leq 250$ V)
 b) Associated Apparatus

NOTES:

- The Entity Concept allows the interconnection of suitable approved Intrinsically safe devices with entity parameters not specifically examined in combination as a system when:
 - U_o or V_{oc} or $V_t \leq U_i$ or V_{max}
 - I_o or I_{sc} or $I_t \leq I_i$ or I_{max}
 - $P_o \leq P_i$
 - C_o or $C_o \geq C_i + C_{cable}$
 - L_o or $L_o \geq L_i + L_{cable}$
- Control equipment connected to the Associated Apparatus shall not use or generate more than $250 V_{rms}$ or V_{dc} .
- Installation should be in accordance with ANSI/ISA-RP12.06.01 "Intrinsic Safety Wiring Methods for Hazardous (Classified) Locations Instrumentation" and the Canadian Electrical Code for Canada or the National Electrical Code for the US.
- The configuration of associated Apparatus shall be approved under Entity Concept.
- Associated Apparatus manufacturer's installation control drawing shall be followed when installing this equipment.
- The VEGAPULS C2x are approved for Class I, Zone 0 and Division 1 applications. If connecting [Ex ib]/[AEx ib] Associated Apparatus to the VEGAPULS C 2x, the above system is only suitable for Class 1, Zone 1, or Division 2 hazardous (classified) locations, and is not suitable for Class I, Zone 0, or Division 1 hazardous (classified) locations.
- When cable parameters are unknown, the following may be used: Capacitance = 200 pF/m (60 pF/ft); Inductance = 0.66 μ H/m (0.20 μ H/ft)
- Resistance between intrinsically safe ground and earth ground must be less than one Ohm.
- No revision to drawing without prior Agency Approval.
- Warning: Substitution of components may impair suitability for intrinsic safety and hazardous locations.

Printing date:

VEGA

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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A large grid of graph paper for taking notes, consisting of approximately 20 columns and 30 rows of small squares.

Printing date:

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