

LCR20 HART

Level Radar

ATEX

II 1 G Ex ia IIC T4...T1 Ga

II 1/2G Ex ia IIC T4...T1 Ga/Gb

IECEX

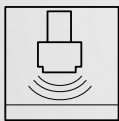
Ex ia IIC T4...T1 Ga

Ex ia IIC T4...T1 Ga/Gb

Betriebsanleitung

Instruction Manual

Manuel d'Instructions



With regard to the supply of products, the current issue of the following document is applicable:
The General Terms of Delivery for Products and Services of the Electrical Industry, published by the Central Association of the Electrical Industry (Zentralverband Elektrotechnik und Elektroindustrie (ZVEI) e.V.) in its most recent version as well as the supplementary clause: "Expanded reservation of proprietorship"

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BG

Правила за техниката на безопасност за електрически средства за производство във взривоопасни зонию Ако не разбирате езика на това ръководство има възможност да си поръчате при нас едно ръководство, преведено има езика на Вашата страна.

ЕС декларация за съответствие

Производителят Pepperl+Fuchs декларира с това заявление за съответствие и с предявяването на сертификата CE, че този продукт отговаря на изискванията на съответните европейски директиви. Прилаганите директиви, норми и документи са указани в заявлението за съответствие.

CS

Bezpečnostní pokyny pro elektrické přístroje v místech s nebezpečím výbuchu. Pokud nemáte možnost přečíst si tento návod, můžete si u nás objednat návod přeložený do svého jazyka.

EU prohlášení o shodě

Společnost Pepperl+Fuchs prohlašuje prostřednictvím tohoto prohlášení a použitím značky CE, že tento výrobek vyhovuje příslušným evropským směrnicím. Zmíněné směrnice, normy a dokumenty jsou uvedeny v Prohlášení o shodě.

DA

Sikkerhedsforskrifter for elektriske apparater certificeret til brug i eksplosionsfarlige områder. Hvis du ikke forstår denne manual, kan en oversat kopi af den på dit eget sprog bestilles fra os.

EU-overensstemmelseserklæring

Med denne overensstemmelseserklæring og tilføjelsen af CE-mærket sikrer producenten Pepperl+Fuchs, at produktet er i overensstemmelse med relevante europæiske direktiver. Dokumentation for overensstemmelsen gives i de anførte direktiver, standarder og dokumenter.

EL

Οδηγίες ασφαλείας ηλεκτρικών συσκευών για επικίνδυνες για έκρηξη περιοχές. Σε περίπτωση που δεν μπορείτε να διαβάσετε αυτές τις οδηγίες, τότε μπορείτε να παραγγείλετε ένα αντίτυπο μεταφρασμένο στη γλώσσα σας.

Δήλωση συμμόρφωσης ΕΕ

Με αυτή τη δήλωση πιστότητας και την τοποθέτηση του σήματος CE ο κατασκευαστής Pepperl+Fuchs δηλώνει, ότι αυτό το προϊόν συμμορφώνεται με τις ευρωπαϊκές οδηγίες που πρέπει να εφαρμόστούν. Οι οδηγίες, τα πορότυπα και τα έγγραφα που εφαρμόστηκαν αναφέρονται στη δήλωση πιστότητας.

ES

Instrucciones de seguridad de aparatos eléctricos homologados para su utilización en áreas expuestas a riesgos de deflagración. Si no entiende este manual, puede pedir un ejemplar en su idioma.

Declaración UE de conformidad

Por la presente declaración y la inclusión de la marca CE, el fabricante Pepperl+Fuchs, declara que el producto cumple con las directivas europeas pertinentes. Las directivas, normas y documentos de aplicación se indican en la declaración de conformidad.

ET

Ohutusjuhised plahvatusohtlikus keskkonnas kasutatavate elektriseadmete kohta. Kui Te ei saa käesolevast juhendist aru, võite meilt tellida Teie riigikeelde tõlgitud juhendi.

ELi vastavusdeklaratsioon

Tootja Pepperl+Fuchs kinnitab juurdelisatud vastavusdeklaratsiooni esitamisega ja CE-märgise kandmisega tootele, et käesolev toode vastab kohaldatavate Euroopa Liidu direktiivide nõuetele. Kohaldatavad direktiivid, standardid ja dokumendid on ära toodud vastavusdeklaratsioonis.

FI

Turvallisuusohjeita sähkölaitteille, jotka on vahvistettu käytettäväksi räjähdysvaarallisilla alueilla. Jos et ymmärrä tätä käsikirjaa, voit tilata meiltä käännöksen omalla kansallisella kielelläsi.

EU-vaatimustenmukaisuusvakuutus

Valmistaja Pepperl+Fuchs vakuuttaa täällä vaatimustenmukaisuustodistuksella ja CE-merkin kiinnittämisellä, että tämä tuote täyttää sovellettavien EU-direktiivien määräykset. Sovellettavat direktiivit, normit ja dokumentit on merkitty vaatimustenmukaisuustodistukseen.

HR

Sigurnosni naputci za elektromaterijal u sredini u kojoj prijete opasnost od eksplozije. Ako Vam nije moguće čitati ovaj naputak, onda imate mogućnost da kod nas naručite naputak sastavljen na Vašem materinskom jeziku.

EU izjava o sukladnosti

Dobavljač Pepperl+Fuchs jamči ovom izjavom i stavljanjem oznake CE da ovaj proizvod udovoljava zahtjevima europskih direktiva koje su na snazi. U izjavi o usuglašenosti se navode direktive, norme i dokumenti koji su na snazi.

HU

Biztonsági információk robbanásveszélyes területre való elektromos eszközökhöz. Amennyiben nem tudja elolvasni ezt az útmutatót, akkor megrendelheti az Ön anyanyelvére lefordítva is.

EU-megfelelőségi nyilatkozat

Az Pepperl+Fuchs mint gyártó jelen megfeleléségi nyilatkozattal és a CE-jelzés felhelyezésével kijelenti, hogy ez a termék megfelel az alkalmazandó európai irányelveknek. Az alkalmazott irányelvek, szabványok és dokumentumok a megfeleléségi nyilatkozatban fel vannak tüntetve.

IT

Istruzioni di sicurezza per apparecchiature elettriche certificate per l'utilizzo in aree con pericolo di esplosione. Se il presente manuale non risulta comprensibile potete ordinarcene una copia tradotta nella vostra lingua.

Dichiarazione di conformità UE

Con questa dichiarazione e con l'applicazione del marchio CE, il costruttore Pepperl+Fuchs, assicura che il prodotto è conforme alle direttive europee vigenti. Prova della conformità è fornita dall'osservanza delle direttive, delle norme e dei documenti elencati.

LT

Elektrios įrenginio saugumo nurodymai, susiję su sprogimo zonomis. Jeigu negalite perskaityti šios instrukcijos, kreipkitės į mus, kad užsisakytumėte į jūsų gimtąją kalbą išverstą instrukciją.

ES atitikties deklaracija

Gamintojas Pepperl+Fuchs šia atitikties deklaracija ir CE ženkliniu patvirtina, kad gaminys atitinka taikytinas ES direktyvas. Taikomos direktyvos, normos ir dokumentai yra pateikiami atitikties deklaracijoje.

LV

Drošības norādījumi elektrisko darba instrumentu lietošanai apgabalos, kas pakļauti sprādzienbīstamībai. Ja Jums nav iespēju izlasīt šos norādījumus, Jūs varat pasūtīt pie mums tulkojumu Jūsu valsts valodā.

ES atbilstības deklarācija

Ražotājs Pepperl+Fuchs ar šo atbilstības apliecinājumu un CE zīmola lietojumu apstiprina, ka produkts izgatavots saskaņā ar atbilstošajām Eiropas vadlīnijām. Piemērotās vadlīnijas, normas un dokumenti atrunāti atbilstības apliecinājumā.

NL

Veiligheidsinstructies voor elektrisch materieel in explosiegevaarlijke omgeving. Wanneer u deze handleiding niet kunt lezen, kunt u een in uw landstaal vertaalde handleiding bij ons bestellen.

EU-conformiteitsverklaring

De leverancier Pepperl+Fuchs waarborgt met deze verklaring en het aanbrengen van het CE-teken, dat dit product overeenstemt met de geldende Europese richtlijnen. De geldende richtlijnen, normen en documenten zijn aangegeven in de conformiteitsverklaring.

PL

Wskazówki dot. bezpieczeństwa dla urządzeń elektrycznych stosowanych w obszarze zagrożonym wybuchem. Jeśli niniejsza instrukcja napisana jest w języku, którym się nie posługujesz, możesz zamówić u nas przetłumaczony dokument.

Deklaracja zgodności UE

Producent Pepperl+Fuchs w niniejszej deklaracji zgodności wraz z nadaniem znaku CE oświadcza, że produkt ten jest zgodny z obowiązującą Europejską Dyrektywą. Zastosowane wytyczne, normy oraz dokumenty podane są w deklaracji zgodności.

PT

Instruções de segurança para dispositivos eléctricos certificados para utilização em áreas de risco de incêndio. Se não compreender este manual, pode encomendar-nos directamente uma cópia na sua língua.

Declaração UE de conformidade

Com esta declaração de conformidade e a aplicação da marca CE, o fabricante Pepperl+Fuchs, garante que o produto obedece às directivas europeias a aplicar. As directivas, normas e documentos são apresentadas na declaração de conformidade.

RO

Indicații de siguranță pentru mijloacele de producție electrice pentru zonele periclitare de explozie. Dacă nu puteți citi aceste instrucțiuni, atunci puteți comanda la noi instrucțiunile traduse în limba țării dumneavoastră.

Declarația UE de conformitate

Producătorul Pepperl+Fuchs declară prin declarația de conformitate alăturată și prin aplicarea semnelui CE că acest produs corespunde directivelor europene aplicabile. Directivele, normele aplicate și documentele sunt menționate în declarația de conformitate.

SK

Bezpečnostné pokyny pre elektrické zariadenie prevádzkované v priestoroch s nebezpečenstvom výbuchu. Ak nemáte možnosť prečítať si tento návod, môžete si u nás objednať návod preložený do svojho jazyka.

EÚ vyhlásenie o zhode

Spoločnosť Pepperl+Fuchs vyhlasuje prostredníctvom tohto vyhlásenia o konformite a použití značky CE, že tento výrobok vyhovuje príslušným európskym smerniciam. Zmieňované smernice, normy a dokumenty sú uvedené vo Vyhlásení o konformite.

SL

Varnostni napotki glede električne opreme, namenjene za uporabo v eksplozivnih območjih. Če teh navodil ne morete razumeti, lahko pri nas naročite prevod v vaš jezik.

Izjava EU o skladnosti

Proizvajalec Pepperl+Fuchs s to izjavo o skladnosti in navedbo oznake CE izjavlja, da je ta izdelek skladen s predpisanimi evropskimi smernicami. Upoštevane smernice, standardi in dokumenti so navedeni v izjavi o skladnosti.

SV

Säkerhetsföreskrifter för elektrisk utrustning certifierad för användning i explosionsfarliga områden. Om du inte förstår denna manual, kan en översatt kopia på ditt eget språk beställas från oss.

EU-försäkran om överensstämmelse

Pepperl+Fuchs försäkrar med vidstående försäkran om överensstämmelse och med CE-märkningen att denna produkt överensstämmer med de tillämpbara europeiska riktlinjerna. De tillämpade riktlinjerna, normerna och dokumenten anges i försäkran om överensstämmelse.

**EU-Konformitätserklärung/EU-Declaration of conformity/
Déclaration UE de conformité**

EU-Declaration of conformity

en/de

EU-Konformitätserklärung

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No. / Nr.: DOC-4928
Date / Datum: 2020-11-20

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Declaration of conformity / Konformitätserklärung

We, Pepperl+Fuchs SE declare under our sole responsibility that the products listed below are in conformity with the listed European Directives and standards.

Die Pepperl+Fuchs SE erklärt hiermit in alleiniger Verantwortung, dass die unten gelisteten Produkte den genannten Europäischen Richtlinien und Normen entsprechen.

Products / Produkte

Product / Produkt	Item number	Description / Beschreibung
LCR20	70114396	Füllstandsradar

Directives and Standards / Richtlinien und Normen

EU-Directive EU-Richtlinie	Standards Normen
2014/53/EU (RE) (L153/62-106)	EN 300328-V1.9.1:2015 EN 301489-1 V1.9.2:2011 EN 301489-17 V2.2.1:2012 EN 302372 V2.1.1:2016 EN 302729 V2.1.1:2016
2014/34/EU (ATEX) (L96/309-356)	EN IEC 60079-0:2018 EN 60079-11:2012 EN 60079-26:2015
2011/65/EU (RoHS) (L174/88-110)	EN IEC 63000:2018

Supplemental Standards Sonstige Normen	Remarks Bemerkungen
EN 61010-1:2010	
EN 61326-1:2013	

Affixed CE Marking / Angebrachte CE-Kennzeichnung



Signatures / Unterschriften

Mannheim, 2020-11-20

ppa. Michael Kessler
Executive Vice President Components & Technologie

i.V. Martin Holdefer
Continuation Manager Value Engineering

ANNEX ATEX

Notified Body QM-System / Notifizierte Stelle des QM-Systems:

Physikalisch Technische Bundesanstalt (0102)
Bundesallee 100
38116 Braunschweig
Germany

Marking and Certificates / Kennzeichnung und Zertifikate

Products / Produkte	ELWMS	
Marking Kennzeichnung	Certificate Zertifikat	Issuer ID Aussteller ID
II 1 G II 1/2 G	SEV 20 ATEX 0490 X	1258

Key for Issuer ID / Schlüssel zur Aussteller ID

ID	Issuer / Aussteller
1258	Eurofins Electric & Electronic Product Testing AG Luppenstrasse 3 CH - 8320 Fehraltorf Switzerland

Level Radar LCR20

4 to 20 mA HART

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EN

1 Associated Documentation

This document is an integral part of the following documents: BA015780, KA012480
The documents which are supplied and correspond to the device type apply.

2 Supplementary Documentation

Explosion protection compendium

3 Manufacturer's Certificates

EU Declaration of Conformity

see page 5

EU Type-Examination Certificate

Certificate number: SEV 20 ATEX 0490 X

List of applied standards: see page 5

IEC Declaration of Conformity

Certificate number: IECEX SEV 20.0029X

Affixing the certificate number certifies conformity with the following standards (depending on the device version).

- IEC 60079-0:2017
- IEC 60079-11:2011
- IEC 60079-26:2014

4 Manufacturer Address

Pepperl+Fuchs Group

Lilienthalstraße 200, 68307 Mannheim, Germany

Internet: www.pepperl-fuchs.com

5 Other Standards

Among other things, the following standards shall be observed in their current version for proper installation:

- IEC/EN 60079-14: "Explosive atmospheres - Part 14: Electrical installations design, selection and erection"
- EN 1127-1: "Explosive atmospheres - Explosion prevention and protection - Part 1: Basic concepts and methodology"

6 Extended Order Code

The extended order code is indicated on the nameplate, which is affixed to the device in such a way that it is clearly visible. Additional information about the nameplate is provided in the associated manual.

Structure of the Extended Order Code

Device type		Basic specifications		Optional specifications
LCR20	-	XXXXXX-XX-XX	+	XX

Table 1

X = Placeholder
At this position, an option (number or letter) selected from the specification is displayed instead of the placeholders.

Basic Specifications

The features that are absolutely essential for the device (mandatory features) are specified in the basic specifications. The number of positions depends on the number of features available. The selected option of a feature can consist of several positions.

Optional Specifications

The optional specifications describe additional features for the device (optional features). The number of positions depends on the number of features available.

More detailed information about the device is provided in the following tables. These tables describe the individual positions and IDs in the extended order code which are relevant to hazardous locations.

Extended Order Code: Level Radar

The following specifications reproduce an extract from the product structure and are used to assign:

- This documentation to the device (using the extended order code on the nameplate).
- The device options cited in the document.

Device Type

LCR20

Basic Specifications

Selected option	Position		Description
Antenna, maximum measuring range	LCR20-XXXXXX-XX-XX-XX	1	40 mm/1-1/2 inch, -40 ... 80 °C (-40 ... 176 °F), measuring range up to 15 m in liquids
		2	80 mm/3 inch, -40 ... 80 °C (-40 ... 176 °F), measuring range up to 20 m in liquids
Process connection rear side, material	LCR20-XXXXXX-XX-XX-XX	G31	Thread ISO228 G1, PVDF
		N31	Thread ASME MNPT1, PVDF, FNPT1/2 conduit connection
Process connection front side, material	LCR20-XXXXXX-XX-XX-XX	A	UNI slip on flange 3 inch/DN80/80, PP, max. 4 bar abs/58 psia, suitable for 3 inch 150 lbs/DN80 PN16/10K 80
		B	UNI slip on flange 4 inch/DN100/100, PP, max. 4 bar abs/58 psia, suitable for 4 inch 150 lbs/DN100 PN16/10K 100
		C	UNI slip on flange 6 inch/DN150/150, PP, max. 4 bar abs/58 psia, suitable for 6 inch 150 lbs/DN150 PN16/10K 150
		D	Thread ASME MNPT1-1/2, PVDF
		I	Thread ASME MNPT2, PVDF
		5	Thread ISO228 G1-1/2, PVDF
		6	Thread ISO228 G2, PVDF
		M	Mounting customer side without flange
Cable length	LCR20-XXXXXX-XX-XX-XX	A	in foot, specified length, any length from 16 to 980 foot
		1	5 m/16 foot
		2	10 m/32 foot
		3	20 m/65 foot
		8	in m, specified length, any length from 5 to 300 m
Power supply, output, operation	LCR20-XXXXXX-XX-XX-XX	IB	2-wire, 4 to 20 mA HART, HART/Bluetooth (app) configuration
		IH	2-wire, 4 to 20 mA HART, HART configuration
Approval	LCR20-XXXXXX-XX-XX-XX	E1	ATEX II 1G Ex ia IIC T4...T1 Ga
		EX	ATEX II 1/2G Ex ia IIC T4...T1 Ga/Gb
		IA	IEC Ex ia IIC T4...T1 Ga
		IB	IEC Ex ia IIC T4...T1 Ga/Gb

Table 2

Optional specifications

Selected option	Position		Description
Accessory enclosed	LCR20-XXXXXX-XX-XX-XX	RA	UNI flange 2 inch/DN50/50, PP, front side, max. 4 bar abs/58 psia
		RB	* UNI flange 2 inch/DN50/50, PP, rear side, max. 4 bar abs/58 psia
		RD	UNI flange 3 inch/DN80/80, PP, front side, max. 4 bar abs/58 psia
		RE	UNI flange 3 inch/DN80/80, PP, rear side, max. 4 bar abs/58 psia
		RG	UNI flange 4 inch/DN100/100, PP, front side, max. 4 bar abs/58 psia
		RH	UNI flange 4 inch/DN100/100, PP, rear side, max. 4 bar abs/58 psia
		R1	Weather protection cover, PVDF
		R7	Flooding protection tube, PBT-PC metallized, suitable for 40 mm/1-1/2 inch antenna with process connection front side G1-1/2
		R8	Flooding protection tube, PBT-PC metallized, suitable for 80 mm/3 inch antenna

Table 3

7

Safety Instructions: General

- Staff must meet the following conditions for mounting, electrical installation, commissioning and maintenance of the device:
 - Be suitably qualified for their role and the tasks they perform
 - Be trained in explosion protection
 - Be familiar with national regulations
- Install the device according to the manufacturer's instructions and national regulations.
- Do not operate the device outside the specified electrical, thermal and mechanical parameters.
- Only use the device in media to which the wetted materials have sufficient durability.
- Avoid electrostatic charging:
 - Of plastic surfaces (e. g. housing, sensor element, special varnishing, attached additional plates, ...)
 - Of isolated capacities (e. g. isolated metallic plates)
- Modifications to the device can affect the explosion protection and must be carried out by staff authorized to perform such work by Pepperl+Fuchs

8 Safety Instructions: Special Conditions

Permitted ambient temperature range at the electronics housing:

For temperature classes T4...T1: $-40\text{ °C} \leq T_{\text{amb}} \leq +80\text{ °C}$

Permitted process temperature range:

For temperature classes T4...T1: $-40\text{ °C} \leq T_p \leq +80\text{ °C}$

- Avoid electrostatic charging of the housing (e. g. friction, cleaning, maintenance, strong medium flow).
- In the case of process connections made of polymeric material or with polymeric coatings, avoid electrostatic charging of the plastic surfaces.
- In the event of additional or alternative special varnishing on the housing or other metal parts:
 - Observe the danger of electrostatic charging and discharge.
 - Do not rub surfaces with a dry cloth.

9 Safety Instructions: Installation

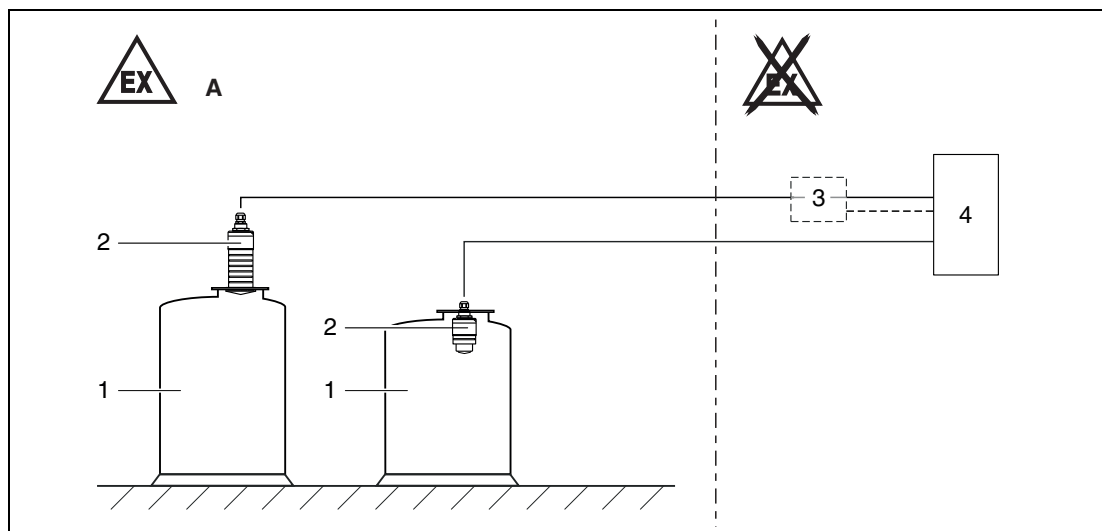


Figure 1

- A** Zone 0, Zone 1
- 1** Tank; Zone 0, Zone 1
- 2** Level radar LCR20
- 3** Terminal box (optional)
- 4** Controlling unit

- After aligning (rotating) the housing, retighten the fixing screw (see manual).
- Install the device to exclude any mechanical damage or friction during the application. Pay particular attention to flow conditions and tank fittings.
- Continuous service temperature of the connecting cable: -40 °C to $\geq +80\text{ °C}$

Intrinsic Safety

- The device is only suitable for connection to certified, intrinsically safe equipment with explosion protection Ex ia/Ex ib.
- The intrinsically safe input power circuit of the device is isolated from ground. If the device is only equipped with one input, the dielectric strength of the input is at least $500 V_{rms}$. If the device is equipped with more than one input, the dielectric strength of each individual input to ground is at least $500 V_{rms}$, and the dielectric strength of the inputs vis-à-vis one another is also at least $500 V_{rms}$.
- Observe the pertinent guidelines when interconnecting intrinsically safe circuits.
- When the device is connected to certified intrinsically safe circuits of Category Ex ib for Equipment Groups IIC and IIB, the type of protection changes to Ex ib IIC and Ex ib IIB. Do not operate the antenna in Zone 0 if connecting to an intrinsically safe circuit of Category Ex ib.
- When the intrinsically safe Ex ia circuits of the device are connected to certified intrinsically safe circuits of Category Ex ib for Equipment Groups IIC or IIB, the type of protection changes to Ex ib [ia] IIC or Ex ib [ia] IIB. Regardless of the power supply, all the internal circuits correspond to Ex ia IIC type of protection (e. g. service interface, external display, sensor).

10 Safety Instructions: Zone 0

- In the event of potentially explosive vapor/air mixtures, only operate the device under atmospheric conditions.
 - Temperature: -40 to +80 °C
 - Pressure: 80 to 110 kPa (0.8 to 1.1 bar)
 - Air with normal oxygen content, usually 21 % (V/V)
- If no potentially explosive mixtures are present, or if additional protective measures have been taken, the device may also be operated under non-atmospheric conditions in accordance with the manufacturer's specifications.
- Associated devices with galvanic isolation between the intrinsically safe and non-intrinsically safe circuits are preferred.
- Only use the device in media to which the SilGel 612 EH potting compound of the electronic insert and the housing made of PVDF Kynar 720 have sufficient durability.
- If there is a risk of dangerous potential differences within Zone 0 (e. g. through the occurrence of atmospheric electricity), implement suitable measures for intrinsically safe circuits in Zone 0.

11 Connection Data

When using the internal overvoltage protection: No changes to the connection values.

Ex ia

Power supply and signal circuit with protection type: intrinsic safety Ex ia IIC, Ex ia IIB.

Basic specification, option Power supply, Output, Operation = IH, IB

Cable blue (-), brown (+)

Power supply:

$$U_i = 30 \text{ V}$$

$$I_i = 100 \text{ mA}$$

$$P_i = 750 \text{ mW}$$

effective inner inductance $L_i = 35 \mu\text{H}$

effective inner capacitance $C_i = 15 \text{ nF}$

Table 4

EN

Your automation, our passion.

Explosion Protection

- Intrinsic Safety Barriers
- Signal Conditioners
- FieldConnex® Fieldbus
- Remote I/O Systems
- Electrical Ex Equipment
- Purge and Pressurization
- Industrial HMI
- Mobile Computing and Communications
- HART Interface Solutions
- Surge Protection
- Wireless Solutions
- Level Measurement

Industrial Sensors

- Proximity Sensors
- Photoelectric Sensors
- Industrial Vision
- Ultrasonic Sensors
- Rotary Encoders
- Positioning Systems
- Inclination and Acceleration Sensors
- Fieldbus Modules
- AS-Interface
- Identification Systems
- Displays and Signal Processing
- Connectivity

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