

Betriebsanleitung  
Instruction manual  
Notice d'instructions

***Pulscon***

**LTC50, LTC51**

**4 mA ... 20 mA HART, 2-wire**

**ATEX: II 1/2G Ex ia IIC T6-T1 Ga/Gb  
II 1/2G Ex d [ia] IIC T6-T1 Ga/Gb**



**SI005000-D**

**DE** – Sicherheitshinweise für elektrische Betriebsmittel für explosionsgefährdete Bereiche, siehe Seite 5

**EN** – Safety instructions for electrical apparatus for explosion-hazardous areas, see page 15

**FR** – Conseils de sécurité pour matériels électriques destinés aux zones explosibles, regardez à la page 25

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

**Заявление за съответствие с EG**

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.

**Prohlášení o shodě s ES**

Společnost Pepperl+Fuchs prohlašuje prostřednictvím tohoto prohlášení a použitím značky CE, že tento výrobek vyhovuje příslušným evropským směrnici. 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.

**EF-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 αντίστοιχο μεταφρασμένο στη γλώσσα σας.

**Δήλωση πιστότητας ΕΚ**

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 εφαρμοστούν. 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 de conformidad CE**

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.

**EL vastavusdeklaratsioon**

Tootja Pepperl+Fuchs kinnitab juurdelisatud vastavusdeklaratsiooniga esitamise ja CE-märgise kandmise 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-vaatimustenmukaisuustodistus**

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.

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

**EK-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 ordinarne una copia tradotta nella vostra lingua.

**Dichiarazione di conformità CE**

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 -** Elektros įrenginio saugumo nurodymai, susiję su sprogdimo zonomis. Jeigu negalite perskaityti šios instrukcijos, kreipkitės į mus, kad užsisakytumėte į jūsų gimtąją kalbą išverstą instrukciją.

**EB 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 sprādzienbīstamai. Ja Jums nav iespēju izlasīt šos norādījumus, Jūs varat pasūtīt pie mums tulkojumu Jūsu valsts valodā.

**ES atbilstības apliecinājums**

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

**EG 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 WE**

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 de conformidade CE**

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.

**Declarație de conformitate CE**

Producătorul Pepperl+Fuchs declară prin declarația de conformitate alăturată și prin aplicarea semnului 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 nebezpečenstvom výbuchu. Ak nemáte možnosť prečítať si tento návod, môžete si u nás objednať návod preložený do svojho jazyka.

**Vyhlasenie o konformite s ES**

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

**Pojasnilo glede potrdila o skladnosti EU**

Proizvajalec Pepperl+Fuchs s to izjavo o skladnosti in navedbo oznake CE izjavlja, da je ta izdelek skladen s predpisanimi evropskimi smernicami. Upoštewane 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.

**EG-försäkran om överensstämmelse**

Pepperl+Fuchs försäkras 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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Date / Datum: 2015-03-26

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**Declaration of conformity / Konformitätserklärung**

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

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

**Productfamily / Produktfamilie**

Productfamily / Produktfamilie	Description / Beschreibung
LTC50-X-XXXXX-XXXXX-XX	Pulskon Guided Microwave
LTC51-X-XXXXX-XXXXX-XX	Pulskon Guided Microwave
LTC57-X-XXXXX-XXXXX-XX	Pulskon Guided Microwave

The „X“ marked letters of the type code are placeholders and can be replaced by the code described in ANNEX TYPE CODE.  
Die mit „X“ markierten Stellen im Typenschlüssel sind Platzhalter und können durch den Schlüssel ersetzt werden der in ANNEX TYPE CODE beschrieben ist.

**ANNEX TYPE CODE**

The „X“ marked letters of the type code are placeholders and can be replaced by the following code:  
Die mit „X“ markierten Stellen im Typenschlüssel sind Platzhalter und können durch folgenden Schlüssel ersetzt werden:

LTC50-X-XXXXX-XXXXX-XX								
LTC50	-X	-XXX	X	X	-XX	XX	X	-XX
Product family	Probe version	Process Connection	Electrical connection	Sealing	Housing	Electrical Output IH, ID, IE, PA, DH	Display	Certificates Options E1, EX, ED, SX, EG, EW
LTC51-X-XXXXX-XXXXX-XX								
LTC51	-X	-XXX	X	X	-XX	XX	X	-XX
Product family	Probe version	Process Connection	Electrical connection	Sealing	Housing	Electrical Output IH, ID, IE, PA, DH	Display	Certificates Options E1, EX, ED, E2, SX, EG, EW
LTC57-X-XXXXX-XXXXX-XX								
LTC57	-X	-XXX	X	X	-XX	XX	X	-XX
Product family	Probe version	Process Connection	Electrical connection	Sealing	Housing	Electrical Output IH, ID, IE, PA, DH	Display	Certificates Options E1, EX, S3, S4, SX, EG

**Directives and Standards / Richtlinien und Normen**

EU-Directive EU-Richtlinie	Standards Normen
2004/108/EC (EMC)	EN 61326-1:2006 EN 61326-2-3:2006
94/9/EC (ATEX)	EN 60079-0:2012 EN 60079-1:2007 EN 60079-11:2012 EN 60079-26:2007 EN 60079-31:2009

**Affixed CE Marking / Angebrachte CE-Kennzeichnung**



**Signatures / Unterschriften**

Mannheim, 2015-03-26

ppa. Lutz Liebers  
Vice President Sales

i.V. Martin Holdefer  
Business Development Manager

**ANNEX 94/9/EC (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	All products listed above (depending on ordering option) / Alle oben gelisteten Produkte (abhängig von Bestelloption)	
Marking Kennzeichnung	Certificate Zertifikat	Issuer ID Aussteller ID
⊕ II 1 G ⊕ II 1/2 G ⊕ II 1/3 G ⊕ II 1 D ⊕ II 1/2 D	DEKRA 14 ATEX 0117 X	0344

**Key for Issuer ID / Schlüssel zur Aussteller ID**

ID	Issuer / Aussteller
0344	DEKRA Certification B.V. Meander 1051 6825 MJ Arnhem Netherlands



# ***Pulscon*** **LTC50, LTC51**

**2-wire, 4 mA ... 20 mA, HART**

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EN

**Associated documentation**

This document is an integral part of the following Operating Instructions:  
BA010000, BA010010  
The Operating Instructions pertaining to the device apply.

**Supplementary documentation**

Explosion-protection manual

**General notes:  
Combined approval**

The device is suitable for installation with explosion protection "intrinsic safety Ex i" or "flameproof enclosure Ex d".

- Before initial commissioning, specify the type of protection.
- It is not permitted to change the type of protection after initial commissioning as this can jeopardize the explosion protection.

For aluminum housings:

Void out the explosion protection that is not used on the nameplate.

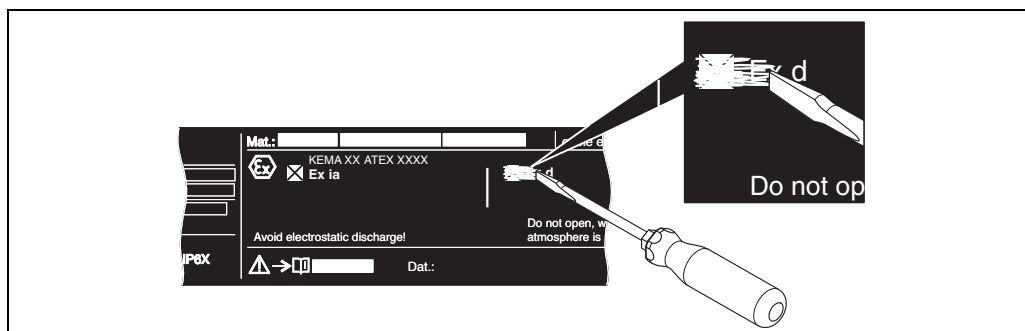


Figure 1

For stainless steel housings:

Using a striking tool, mark the explosion protection used, or void out the explosion protection that is not used.

**Caution!**

Depending on the type of protection used, observe the following safety instructions for installation with explosion protection "intrinsic safety" (Part 1) or "flameproof enclosure" (Part 2).

**Manufacturer's certificates**

**EU-Declaration of conformity**

see page 3

**EC type-examination certificate**

Certificate number:

DEKRA 14 ATEX 0117X

**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 Operating Instructions.

Structure of the extended order code:

<b>Device type</b>		<b>Basic specifications</b>		<b>Optional specifications</b>
LTC5X	-	X-XXXXXX-XXXXXX-XX XXXXX	+	XXXXXXXXXXXX

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.

**Basic specifications**

Selected Option	Position	Description
Approval	LTC5X-X-XXXXX-XXXXX- <b>XX</b> XXXXX EW	ATEX II 1/2G Ex ia IIC T6-T1 Ga/Gb ATEX II 1/2G Ex d [ia] IIC T6-T1 Ga/Gb
Electrical output	LTC5X-X-XXXXX-XX <b>XXX</b> -XX XXXXX IH	2-wire, 4 mA ... 20 mA, HART
Display, operation	LTC5X-X-XXXXX-XXXX <b>X</b> -XX XXXXX B D E	without display, via communication SD02, 4-line, push-buttons and data backup function SD03, 4-line, illuminated, touch control and data backup function
Housing	LTC5X-X-XXXXX- <b>XX</b> XXX-XX XXXXX A2	GT20 dual compartment, alu coated
	LTC51-X-XXXXX- <b>XX</b> XXX-XX XXXXX A3	GT18 dual compartment, 316L
Seal	LTC50-X-XXXX <b>X</b> -XXXXX-XX XXXXX 2	Viton, -20 °C ... 80 °C
	LTC51-X-XXXX <b>X</b> -XXXXX-XX XXXXX 3	EPDM, -40 °C ... 120 °C
		4 5

**Optional specifications**

Selected Option	Position	Description
Probe design	XXXXXX <b>X</b> XXX B	Sensor remote, 3 m cable, detachable, with mounting bracket

## Intrinsic safety Ex i

### 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 (e. g. IEC/EN 60079-14)
- 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.
- Refer to the temperature tables for the relationship between the permitted ambient temperature for the sensor and/or transmitter, depending on the range of application, and the temperature class.
- Modifications to the device can affect the explosion protection and must be carried out by staff authorized to perform such work by Pepperl+Fuchs.
- When replacing the probe electronics or opening the connection between the remote cable and the probe, a jumper plug must be used or a short-circuit must be established between the probe contact and the potential equalization conductor to avoid electrostatically charging the probe.

### Safety instructions: Special conditions

Permitted ambient temperature range at the electronics housing:  $40\text{ °C} \leq T_{\text{amb}} \leq +80\text{ °C}$ .  
Observe the information in the temperature tables.

### Safety instructions: Installation

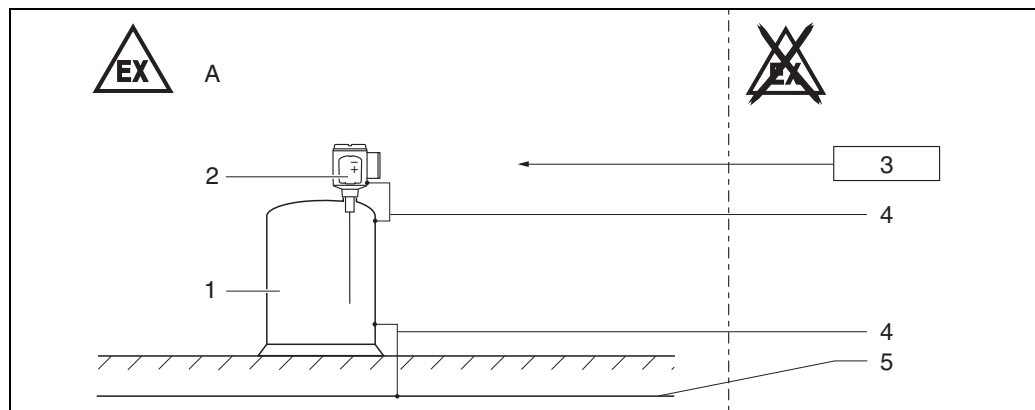


Figure 2

A Zone 0, Zone 1

- 1 Tank; Zone 0, Zone 1
- 2 Electronic insert
- 3 Certified associated apparatus
- 4 Potential equalization line
- 5 Potential equalization

- After aligning (rotating) the housing, retighten the fixing screw (see Operating Instructions).
- When mounting the device:
  - 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:  $-40\text{ °C} \dots \geq +85\text{ °C}$ ; in accordance with the range of service temperature taking into account additional influences of the process conditions ( $T_{\text{amb, min}}$ ), ( $T_{\text{amb, max}} + 20\text{ K}$ ).



### 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<sub>rms</sub>. If the device is equipped with more than one input, the dielectric strength of each individual input to ground is at least 500 V<sub>rms</sub>, and the dielectric strength of the inputs vis-à-vis one another is also at least 500 V<sub>rms</sub>.
- Observe the pertinent guidelines when interconnecting intrinsically safe circuits (e. g. IEC/EN 60079-14, Proof of Intrinsic Safety).
- The device can be connected to a service tool: refer to the Operating Instructions and specifications in the "Overvoltage protection" chapter.
- 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).

### Potential equalization

- Integrate the device into the local potential equalization.

### Overvoltage protection

- If an overvoltage protection according to IEC/EN 60079-14 against atmospheric over voltages is required: no other circuits may leave the housing during normal operation without additional measures.
- For installations which require overvoltage protection to comply with national regulations or standards (e. g. IEC/EN 60079-14), install the device using overvoltage protection.
- Observe the safety instructions of the overvoltage protection.

### Safety instructions: Zone 0

- In the event of potentially explosive vapor/air mixtures, only operate the device under atmospheric conditions.
  - Temperature: -20 °C ... +60 °C
  - Pressure: 80 kPa ... 110 kPa (0,8 bar ... 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 according to EN 1127-1, 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.
- 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 (e. g. in accordance with the requirements of IEC/EN 60079-14).

### Temperature tables

see page 35

**Connection data**

Basic specification, option "Approval" = EW

**Ex ia**

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

Basic specification, option "Electrical output" = IH (TRC [02])

**Terminal 1 (+), 2 (-)**

Power supply

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

$$I_i = 300 \text{ mA}$$

$$P_i = 1 \text{ W}$$

effective inner inductance  $L_i = 0 \mu\text{H}$

effective inner capacitance  $C_i = 5 \text{ nF}$

**Service interface (CDI)**

Taking the following values into consideration, the device can be connected to the certified service tool or a similar interface:

**Service interface**

$$U_i = 7.3 \text{ V}$$

effective inner inductance  $L_i = \text{negligible}$

effective inner capacitance  $C_i = \text{negligible}$

$$U_o = 7.3 \text{ V}$$

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

$$P_o = 160 \text{ mW}$$

$L_o \text{ (mH)} =$	5.00	2.00	1.00	0.50	0.20	0.10	0.05	0.02	0.01	0.005	0.002	0.001
$C_o \text{ (}\mu\text{F)} =$	0.73	1.20	1.60	2.00	2.60	3.20	4.00	5.50	7.30	10.00	12.70	12.70

EN

## Flameproof enclosure Ex d

### 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 (e. g. IEC/EN 60079-14)
- 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.
- Refer to the temperature tables for the relationship between the permitted ambient temperature for the sensor and/or transmitter, depending on the range of application, and the temperature class.
- Modifications to the device can affect the explosion protection and must be carried out by staff authorized to perform such work by Pepperl+Fuchs.
- When replacing the probe electronics or opening the connection between the remote cable and the probe, a jumper plug must be used or a short-circuit must be established between the probe contact and the potential equalization conductor to avoid electrostatically charging the probe.

EN

### Safety instructions: Special conditions

Permitted ambient temperature range at the electronics housing:  $-40\text{ °C} \leq T_{\text{amb}} \leq +80\text{ °C}$ .  
Observe the information in the temperature tables.

### Safety instructions: Installation

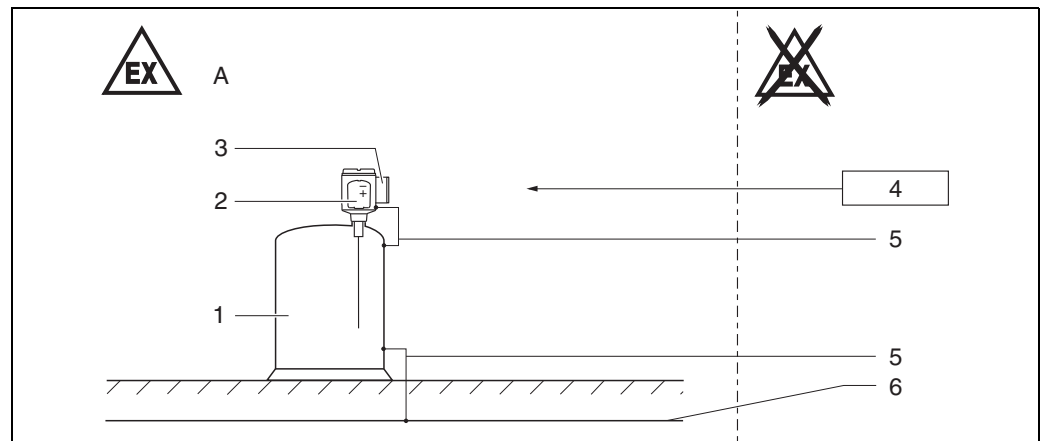


Figure 3

A Zone 1

- 1 Tank; Zone 0, Zone 1
- 2 Electronics compartment Ex ia; Electronic insert
- 3 Connection compartment Ex d
- 4 Power supply
- 5 Potential equalization line
- 6 Potential equalization

- After aligning (rotating) the housing, retighten the fixing screw (see Operating Instructions).
- When mounting the device:
  - 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:  $-40\text{ °C} \dots \geq +85\text{ °C}$ ; in accordance with the range of service temperature taking into account additional influences of the process conditions  
( $T_{\text{amb,min}}$ ), ( $T_{\text{amb,max}} + 20\text{ K}$ ).
- In potentially explosive atmospheres:
  - Do not open the electrical connection of the power supply circuit when energized.
  - Do not open the connection compartment cover.
- Only use certified cable entries suitable for the application.  
Observe selection criteria as per IEC/EN 60079-14. Accordingly, the connection terminal does not include any ignition sources.
- When operating the transmitter housing at an ambient temperature under  $-20\text{ °C}$ , use appropriate cables and cable entries permitted for this application.
- When connecting through a conduit entry approved for this purpose, mount the associated sealing unit directly at the housing.

- Seal unused entry glands with approved sealing plugs that correspond to the type of protection. The plastic transport sealing plug does not meet this requirement and must therefore be replaced during installation.
- Before operation:
  - Screw in the cover all the way.
  - Tighten the securing clamp on the cover.

**Intrinsic safety**

- The device can be connected to a service tool: refer to the Operating Instructions.

**Potential equalization**

- Integrate the device into the local potential equalization.

**Safety instructions:  
Zone 0**

- In the event of potentially explosive vapor/air mixtures, only operate the device under atmospheric conditions.
  - Temperature: -20 °C ... +60 °C
  - Pressure: 80 kPa ... 110 kPa (0.8 bar ... 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 according to EN 1127-1, the device may also be operated under non-atmospheric conditions in accordance with the manufacturer's specifications.

**Temperature tables**

see page 35

**Connection data**

Basic specification, option "Approval" = EW

**Connection compartment Ex d**

The power consumption of I/O modules with passive PFS output can be limited for certain applications.

- Recommended: Power consumption = 1 W. This is obtained for a supply voltage at the terminals of 27 V DC.
- For higher supply voltages ( $U_{max}$ ): Insert a serial resistance ( $R_V$ ) in order to limit the power consumption, see table below.

**Table for the PFS serial resistance ( $R_V$ ):**

Power consumption	1.0 W
Total power consumption	1.88 W
Internal resistance $R_i$	760 $\Omega$

$U_{max}$ [V]	$R_V$ min
35	205 $\Omega$
34	177 $\Omega$
33	150 $\Omega$
32	122 $\Omega$
31	95 $\Omega$
30	67 $\Omega$
29	39 $\Omega$
28	12 $\Omega$
27	0 $\Omega$

**Note!**

For values associated with a higher or lower internal power consumption please contact Pepperl+Fuchs.

Basic specification, option "Power Supply; Output" = IH (TRC [03])

Terminal 1 (+), 2 (-)
Power supply: $U_N = 35 \text{ V DC}$ $U_m = 250 \text{ V}$ $I_{\max} = 22 \text{ mA}$

EN

**Electronics compartment Ex ia**

**Service interface (CDI)**

Taking the following values into consideration, the device can be connected to the certified service tool or a similar interface:

Service interface													
$U_i = 7.3 \text{ V}$													
effective inner inductance $L_i = \text{negligible}$													
effective inner capacitance $C_i = \text{negligible}$													
$U_o = 7.3 \text{ V}$													
$I_o = 100 \text{ mA}$													
$P_o = 160 \text{ mW}$													
$L_o \text{ (mH)} =$	5.00	2.00	1.00	0.50	0.20	0.10	0.05	0.02	0.01	0.005	0.002	0.001	
$C_o \text{ (}\mu\text{F)} =$	0.73	1.20	1.60	2.00	2.60	3.20	4.00	5.50	7.30	10.00	12.70	12.70	



EN

# Temperaturtabellen/Temperature tables/ Tableaux des températures

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## Allgemeine Hinweise

Wenn nicht anders angegeben, beziehen sich die Positionen immer auf die Grundspezifikation.

### Hinweis!

Zulässigen Temperaturbereich an der Sonde beachten.

### Auswahltabelle

#### Betriebsart: Ex i

Zulassung		Gehäuse	
EW	ATEX II 1/2G Ex ia IIC T6-T1 Ga/Gb	A2	GT20 Zweikammer, Alu beschichtet
	ATEX II 1/2G Ex d [ia] IIC T6-T1 Ga/Gb	A3	GT18 Zweikammer, 316L

Elektrischer Ausgang		Transmission code des Anschlussklemmenmoduls	
IH	2-Draht, 4 mA... 20 mA HART	TRC [02]; TRC [04] <sup>1</sup>	

<sup>1</sup> siehe Typenschild

#### Betriebsart: Ex d

Zulassung		Gehäuse	
EW	ATEX II 1/2G Ex ia IIC T6-T1 Ga/Gb	A2	GT20 Zweikammer, Alu beschichtet
	ATEX II 1/2G Ex d [ia] IIC T6-T1 Ga/Gb	A3	GT18 Zweikammer, 316L

Elektrischer Ausgang		Transmission code des Anschlussklemmenmoduls	
IH	2-Draht, 4 mA... 20 mA HART	TRC [03]; TRC [05] <sup>1</sup>	

<sup>1</sup> siehe Typenschild

## General notes

Unless otherwise indicated, the positions always refer to the basic specification.

### Note!

Observe the permitted temperature range at the probe.

### Selection table

#### Operation mode: Ex i

Approval		Housing	
EW	ATEX II 1/2G Ex ia IIC T6-T1 Ga/Gb	A2	GT20 dual compartment, Alu coated
	ATEX II 1/2G Ex d [ia] IIC T6-T1 Ga/Gb	A3	GT18 dual compartment, 316L

Elektrical output		Transmission code of the terminal module	
IH	2-wire, 4 mA... 20 mA HART	TRC [02]; TRC [04] <sup>1</sup>	

<sup>1</sup> see nameplate

#### Operation mode: Ex d

Approval		Housing	
EW	ATEX II 1/2G Ex ia IIC T6-T1 Ga/Gb	A2	GT20 dual compartment, Alu coated
	ATEX II 1/2G Ex d [ia] IIC T6-T1 Ga/Gb	A3	GT18 dual compartment, 316L

Elektrical output		Transmission code of the terminal module	
IH	2-wire, 4 mA... 20 mA HART	TRC [03]; TRC [05] <sup>1</sup>	

<sup>1</sup> see nameplate



**Généralités**

Sauf indication contraire, les positions se réfèrent toujours aux spécifications de base.

**Note!**

Tenir compte de la gamme de température admissible à la sonde.

**Tableau de sélection**

**Mode d'opération : Ex i**

Agrément		Boîtier	
EW	ATEX II 1/2G Ex ia IIC T6-T1 Ga/Gb	A2	GT20 double compartiment, alu revêtu
	ATEX II 1/2G Ex d [ja] IIC T6-T1 Ga/Gb	A3	GT18 double compartiment, 316L

Sortie électrique		Code de transmission du module de raccordement
IH	2-fils, 4 mA... 20 mA HART	TRC [02]; TRC [04] <sup>1</sup>

<sup>1</sup> voir plaque signalétique

**Mode d'opération : Ex d**

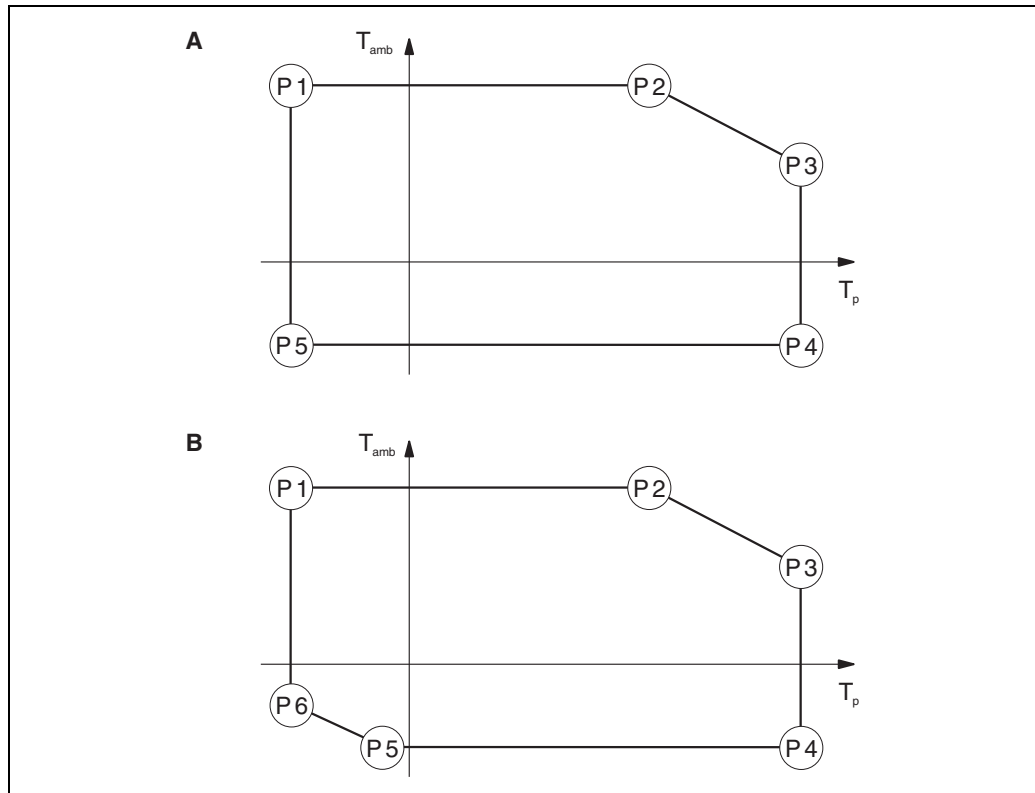
Agrément		Boîtier	
EW	ATEX II 1/2G Ex ia IIC T6-T1 Ga/Gb	A2	GT20 double compartiment, alu revêtu
	ATEX II 1/2G Ex d [ja] IIC T6-T1 Ga/Gb	A3	GT18 double compartiment, 316L

Sortie électrique		Code de transmission du module de raccordement
IH	2-fils, 4 mA... 20 mA HART	TRC [03]; TRC [05] <sup>1</sup>

<sup>1</sup> voir plaque signalétique

Diagramm/Diagram/  
Diagramme

Beispieldiagramme zu den Temperaturtabellen/Example diagrams to the temperature tables/  
Diagrammes d'exemple aux tableaux des températures



Abbildung/Figure/Figure 1

- A Version 1
- B Version 2

$T_{amb}$  Umgebungstemperatur/Ambient temperature/Température ambiante  
 $T_p$  Prozesstemperatur/Process temperature/Température de process

**Sonden-Design: kompakt/Probe design: compact/Construction de sonde: compacte**

**Ex i**

Sonde und Elektronikgehäuse/Probe and electronics housing/Sonde et boîtier de l'électronique :  
Zone 1

**LTC50**

**Elektrischer Ausgang/Electrical output/Sortie électrique = IH (TRC [02])**

Gehäuse/Housing/Boîtier = A2													
Temperaturklasse/ Temperature class/ Classe de température	P 1		P 2		P 3		P 4		P 5		P 6		
	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	
T6 (85 °C)	-20 °C	60 °C	60 °C	60 °C	80 °C	56 °C	80 °C	-20 °C	-20 °C	-20 °C	-20 °C	-	-

**LTC51**

**Elektrischer Ausgang/Electrical output/Sortie électrique = IH (TRC [02])**

Gehäuse/Housing/Boîtier = A3													
Temperaturklasse/ Temperature class/ Classe de température	P 1		P 2		P 3		P 4		P 5		P 6		
	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	
T6 (85 °C)	-40 °C	60 °C	60 °C	60 °C	85 °C	52 °C	85 °C	-40 °C	-40 °C	-40 °C	-40 °C	-	-
T5 (100 °C)	-40 °C	75 °C	75 °C	75 °C	100 °C	67 °C	100 °C	-40 °C	-40 °C	-40 °C	-40 °C	-	-
T4 (135 °C)	-40 °C	80 °C	80 °C	80 °C	135 °C	67 °C	135 °C	-40 °C	-40 °C	-40 °C	-40 °C	-	-
T3 (200 °C)	-40 °C	80 °C	80 °C	80 °C	200 °C	49 °C	200 °C	-40 °C	-40 °C	-40 °C	-40 °C	-	-

Gehäuse/Housing/Boîtier = A2													
Temperaturklasse/ Temperature class/ Classe de température	P 1		P 2		P 3		P 4		P 5		P 6		
	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	
T6 (85 °C)	-40 °C	60 °C	60 °C	60 °C	85 °C	54 °C	85 °C	-40 °C	-40 °C	-40 °C	-40 °C	-	-
T5 (100 °C)	-40 °C	75 °C	75 °C	75 °C	100 °C	69 °C	100 °C	-40 °C	-40 °C	-40 °C	-40 °C	-	-
T4 (135 °C)	-40 °C	80 °C	80 °C	80 °C	135 °C	69 °C	135 °C	-40 °C	-40 °C	-40 °C	-40 °C	-	-
T3 (200 °C)	-40 °C	80 °C	80 °C	80 °C	200 °C	56 °C	200 °C	-40 °C	-40 °C	-40 °C	-40 °C	-	-

**Ex i**

- Sonde/Probe/Sonde: Zone 0
- Elektronikgehäuse/Electronics housing/Boîtier de l'électronique: Zone 1

**LTC5X**

**Elektrischer Ausgang/Electrical output/Sortie électrique = IH (TRC [02])**

Gehäuse/Housing/Boîtier = A2, A3												
Temperaturklasse/ Temperature class/ Classe de température	P 1		P 2		P 3		P 4		P 5		P 6	
	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub> <sup>1</sup>	T <sub>p</sub>	T <sub>amb</sub> <sup>1</sup>	T <sub>p</sub>	T <sub>amb</sub>
T6 (85 °C)	-20 °C	60 °C	60 °C	60 °C	60 °C	60 °C	60 °C	-40 °C	-20 °C	-40 °C	-	-

<sup>1</sup> LTC50, ohne abgesetzten Sensor/without remote sensor/sans sonde séparée = -20 °C

**Sonden-Design: abgesetzt/Probe design: remote/Construction de sonde : séparée**

**Ex i**

- Sonde/Probe/Sonde: Zone 0, Zone 1
- Elektronikgehäuse/Electronics housing/Boîtier de l'électronique: Zone 1

**LTC5X**

optionale Spezifikation, Kennung B (Sonden-Design)/optional specification, ID B (Probe design)/spécifications optionnelles, Identifiant B (Construction de la sonde)

**Elektrischer Ausgang/Electrical output/Sortie électrique = IH (TRC [02])**

Gehäuse/Housing/Boîtier = A2, A3												
Temperaturklasse/ Temperature class/ Classe de température	P 1		P 2		P 3		P 4		P 5		P 6	
	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>
T6 (85 °C)	-	60 °C	-	60 °C	-	60 °C	-	-40 °C	-	-40 °C	-	-
T5 (100 °C)	-	75 °C	-	75 °C	-	75 °C	-	-40 °C	-	-40 °C	-	-

T<sub>p</sub> = abhängig vom Sensor/dependent on the sensor/dépend du capteur

**Sonden-Design: kompakt/Probe design: compact/Construction de sonde: compacte**

**Ex d**

Sonde und Elektronikgehäuse/Probe and electronics housing/Sonde et boîtier de l'électronique :  
Zone 1

**LTC50**

**Elektrischer Ausgang/Electrical output/Sortie électrique = IH (TRC [03])**

Gehäuse/Housing/Boîtier = A2													
Temperaturklasse/ Temperature class/ Classe de température	P 1		P 2		P 3		P 4		P 5		P 6		
	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	
T6 (85 °C)	-20 °C	60 °C	60 °C	60 °C	80 °C	56 °C	80 °C	-20 °C	-20 °C	-20 °C	-20 °C	-	-

**LTC51**

**Elektrischer Ausgang/Electrical output/Sortie électrique = IH (TRC [03])**

Gehäuse/Housing/Boîtier = A3													
Temperaturklasse/ Temperature class/ Classe de température	P 1		P 2		P 3		P 4		P 5		P 6		
	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	
T6 (85 °C)	-40 °C	60 °C	60 °C	60 °C	85 °C	52 °C	85 °C	-40 °C	-40 °C	-40 °C	-40 °C	-	-
T5 (100 °C)	-40 °C	75 °C	75 °C	75 °C	100 °C	67 °C	100 °C	-40 °C	-40 °C	-40 °C	-40 °C	-	-
T4 (135 °C)	-40 °C	80 °C	80 °C	80 °C	135 °C	67 °C	135 °C	-40 °C	-40 °C	-40 °C	-40 °C	-	-
T3 (200 °C)	-40 °C	80 °C	80 °C	80 °C	200 °C	49 °C	200 °C	-40 °C	-40 °C	-40 °C	-40 °C	-	-

Gehäuse/Housing/Boîtier = A2													
Temperaturklasse/ Temperature class/ Classe de température	P 1		P 2		P 3		P 4		P 5		P 6		
	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	
T6 (85 °C)	-40 °C	60 °C	60 °C	60 °C	85 °C	54 °C	85 °C	-40 °C	-40 °C	-40 °C	-40 °C	-	-
T5 (100 °C)	-40 °C	75 °C	75 °C	75 °C	100 °C	69 °C	100 °C	-40 °C	-40 °C	-40 °C	-40 °C	-	-
T4 (135 °C)	-40 °C	80 °C	80 °C	80 °C	135 °C	69 °C	135 °C	-40 °C	-40 °C	-40 °C	-40 °C	-	-
T3 (200 °C)	-40 °C	80 °C	80 °C	80 °C	200 °C	56 °C	200 °C	-40 °C	-40 °C	-40 °C	-40 °C	-	-

**Ex d**

- Sonde/Probe/Sonde: Zone 0
- Elektronikgehäuse/Electronics housing/Boîtier de l'électronique: Zone 1

**LTC5X**

**Elektrischer Ausgang/Electrical output/Sortie électrique = IH (TRC [03])**

Gehäuse/Housing/Boîtier = A2, A3												
Temperaturklasse/ Temperature class/ Classe de température	P 1		P 2		P 3		P 4		P 5		P 6	
	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub> <sup>1</sup>	T <sub>p</sub>	T <sub>amb</sub> <sup>1</sup>	T <sub>p</sub>	T <sub>amb</sub>
T6 (85 °C)	-20 °C	60 °C	60 °C	60 °C	60 °C	60 °C	60 °C	-40 °C	-20 °C	-40 °C	-	-

<sup>1</sup> LTC50, ohne abgesetzten Sensor/without remote sensor/sans sonde séparée = -20 °C

**Sonden-Design: abgesetzt/Probe design: remote/Construction de sonde : séparée**

**Ex d**

- Sonde/Probe/Sonde: Zone 0, Zone 1
- Elektronikgehäuse/Electronics housing/Boîtier de l'électronique: Zone 1

**LTC5X**

optionale Spezifikation, Kennung B (Sonden-Design)/optional specification, ID B (Probe design)/spécifications optionnelles, Identifiant B (Construction de la sonde)

**Elektrischer Ausgang/Electrical output/Sortie électrique = IH (TRC [03])**

Gehäuse/Housing/Boîtier = A2, A3												
Temperaturklasse/ Temperature class/ Classe de température	P 1		P 2		P 3		P 4		P 5		P 6	
	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>	T <sub>p</sub>	T <sub>amb</sub>
T6 (85 °C)	-	60 °C	-	60 °C	-	60 °C	-	-40 °C	-	-40 °C	-	-

T<sub>p</sub> = abhängig vom Sensor/dependent on the sensor/dépend du capteur

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 "Elektrotechnik und Elektroindustrie (ZVEI) e.V." including the supplementary clause: "Erweiterter Eigentumsvorbehalt".

# PROCESS AUTOMATION – PROTECTING YOUR PROCESS



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