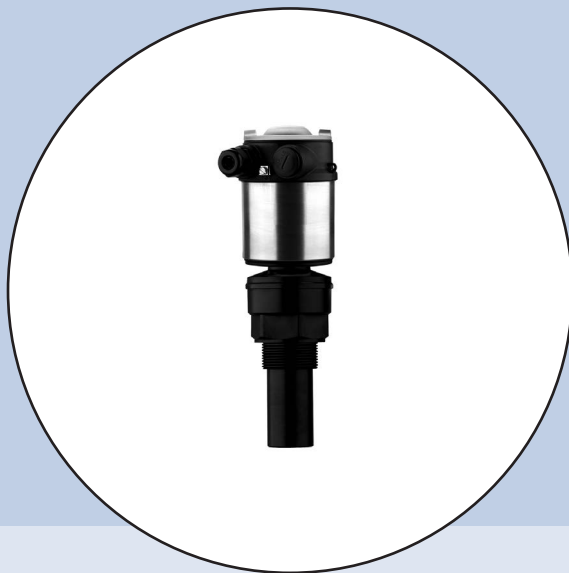




Safety instructions



**LEVEL TRANSMITTER
LT817*.C***H*****

PTB 07 ATEX 2003 X

⊕ II 1/2G, 2G Ex ia IIC T6 ... T1 Ga/Gb,
Gb

CE 0102

Contents

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Please note:

These safety instructions are part of the operating instructions:

- 32058 - LEVEL TRANSMITTER 8176
- 32059 - LEVEL TRANSMITTER 8177
- 45493 - EC type approval certificate PTB 07 ATEX 2003 X

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

**EG-Konformitätserklärung
EC declaration of conformity
Déclaration CE de conformité**

Bürkert Werke GmbH & Co.KG
Christian-Bürkert-Straße 13 - 17
74653 Ingelfingen
Deutschland

erklärt in alleiniger Verantwortung, dass das Produkt
declare under our sole responsibility that our product
déclare sous sa seule responsabilité que le produit

LEVEL TRANSMITTER LT8176.C*H***, LT8177.C***H*****

auf das sich diese Erklärung bezieht, mit den folgenden Normen übereinstimmt
to which this declaration relates is in conformity with the following standards
auquel se réfère cette déclaration est conforme aux normes

**EN 60079-0: 2011
EN 60079-11: 2012
EN 60079-26: 2007
EN 61010-1: 2001**

EN 61326-1: 2006 Emission: class A, Immission: Industrial area

gemäß den Bestimmungen der Richtlinien
following the provision of Directives
conformément aux dispositions des Directives

**94/9/EG
2006/95/EG
2004/108/EG**

CE-Baumusterprüfbescheinigung Nummer
CE-Type Examination Certificate Number
Numéro du certificat d'examen CE de type

**PTB 07 ATEX 2003 X
1. supplement**

Benannte Stelle/Kennnummer
Notified Body/Identification number
Organisme notifié/Numéro d'identification

PTB/0102

Ingelfingen, 05.06.2014



1 Area of applicability

These safety instructions apply to the ultrasonic sensors LEVEL TRANSMITTER 8176 and LEVEL TRANSMITTER 8177 series LEVEL TRANSMITTER LT8176.C***H***, LT8177.C***H*** according to ATEX type approval certificate PTB 07 ATEX 2003 X with the 1. supplement (certificate number on the type label) and for all instruments with the number of the safety instruction (45492) on the type label.

2 General information

The ultrasonic level measuring instrument LEVEL TRANSMITTER LT8176.C***H***, LT8177.C***H*** is used to detect the distance between product surface and transducer by means of ultrasonic waves in the kHz range. The electronics uses the running time of the signals reflected by the product surface to calculate the distance to the product surface. The ultrasonic sensors LEVEL TRANSMITTER LT8176.C***H***, LT8177.C***H*** consist of an electronics housing, a process connection element and a sensor, the transducer. As an option, an indication and adjustment module with the designation AB/MODUL-BÜRKERT can be integrated.

The ultrasonic sensors LEVEL TRANSMITTER LT8176.C***H***, LT8177.C***H*** are suitable for applications in hazardous atmospheres of all combustible materials of explosion group IIA, IIB and IIC for applications requiring instruments of category 1/2G or 2G. The products to be measured can also be combustible liquids, gases, mists or vapours.

If the LEVEL TRANSMITTER LT8176.C***H***, LT8177.C***H*** are installed and operated in hazardous areas, the general Ex installation regulations EN 60079-14 as well as these safety instructions must be observed.

The operating instructions as well as the installation regulations or standards that apply for explosion protection of electrical systems must generally be observed.

The installation of explosion-protected systems must always be carried out by qualified personnel.

Category 1/2G instrument (EPL-Ga/Gb instrument)

The electronics housing of the ultrasonic sensors LEVEL TRANSMITTER LT8176.C***H***, LT8177.C***H*** is installed in hazardous areas requiring instruments of category 2G. The process connection element is installed in the separating wall, which separates areas requiring instruments of category 2G or 1G. The transducer with the mechanical fixing element is installed in hazardous areas requiring instruments of category 1G.

Category 2G instrument (EPL-Gb instrument)

The ultrasonic sensors LEVEL TRANSMITTER LT8176.C***H***, LT8177.C***H*** are installed in hazardous areas requiring instruments of category 2G.

3 Technical data

Electrical versions and data

Ignition protection type intrinsic safety Ex-"i"

The LEVEL TRANSMITTER LT8176.C***H***, LT8177.C***H*** have intrinsically safe circuits. These intrinsically safe circuits are connected to terminals which are located in an Ex-"i" connection compartment.

Power supply and signal circuit: (terminal 1[+], 2[-] in the Ex-"i" connection compartment)

In ignition protection type intrinsic safety Ex ia IIC/IIB

Only for connection to a certified, intrinsically safe circuit.

Maximum values:

- $U_i = 30 \text{ V}$
- $I_i = 131 \text{ mA}$
- $P_i = 983 \text{ mW}$

Effective internal inductance L_i is negligible; effective internal capacity C_i is negligible

Indication and adjustment circuit: (terminals 5, 6, 7, 8 in the electronics compartment or plug connection, with double chamber housing version)

In ignition protection type intrinsic safety Ex ia IIC

For connection to the intrinsically safe power supply and signal circuit of a passive/external indication unit (PTB 02 ATEX 2136 X).

The rules for the interconnection of intrinsically safe circuits between the ultrasonic sensors LEVEL TRANSMITTER LT8176.C***H***, LT8177.C***H*** and the external indication unit are complied with if the total inductance and total capacity of the connection cable between ultrasonic sensors LEVEL TRANSMITTER LT8176.C***H***, LT8177.C***H*** and the indication unit $L_{\text{cable}} = 100 \mu\text{H}$ and $C_{\text{cable}} = 2.8 \mu\text{F}$ is not exceeded. The indication and adjustment module (AB-MODUL-BÜRKERT) integrated in LEVEL TRANSMITTER LT8176.C***H***, LT8177.C***H*** and the connected interface converter are taken into account.

Communication circuit: (I^2C bus socket in the electronics compartment, additionally in the connection compartment with double chamber housing version)

In ignition protection type intrinsic safety Ex ia IIC

For connection to the intrinsically safe signal circuit of an interface converter (PTB 07 ATEX 2013 X).

Display and adjustment module circuit: (spring contacts in the electronics compartment)

In ignition protection type intrinsic safety Ex ia IIC

Only for connection to the display and adjustment module (AB-MODUL-BÜRKERT)

The intrinsically safe circuits are electrically separated from parts which can be grounded.

For applications requiring instruments of category 2G, the intrinsically safe power supply and signal circuit can correspond to protection class ia or ib. For connection to a circuit with protection class ib, the ignition protection type identification is Ex ib IIC T6.

For applications requiring instruments of category 1/2G, the intrinsically safe power supply and signal circuit must be in conformity with protection class ia.

For applications requiring instruments of category 1/2G the LEVEL TRANSMITTER LT8176.C***H***, LT8177.C***H*** is preferably connected to appropriate instruments with electrically isolated intrinsically safe circuits.

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4 Application conditions

Permissible ambient temperatures

Category 1/2G instrument (EPL-Ga/Gb instrument)

Temperature class	Permissible ambient temperature on the electronics	Permissible ambient temperature on the transducer
T3, T2, T1	-40 ... +57 °C	-20 ... +58 °C
	-40 ... +72 °C	-20 ... +60 °C
	-40 ... +85 °C	-20 ... +60 °C

For the specified permissible ambient temperatures on the sensor and electronics, the 80% consideration of EN 1127-1 sect. 6.4.2 is taken into account.

If the LEVEL TRANSMITTER LT8176.C***H***, LT8177.C***H*** are operated at higher temperatures than those specified in the above table, please make sure by means of appropriate measures that there is no danger of ignition from these hot surfaces, under consideration of the 6 K self-warming on the transducer. The permissible temperature on the electronics/housing should not exceed the values specified in the above table.

The prerequisites for operation in the absence of explosive mixtures can be found in the manufacturer specifications.

Category 2G instrument (EPL-Gb instrument)

Temperature class	Permissible ambient temperature on the electronics	Permissible ambient temperature on the transducer
T3, T2, T1	-40 ... +57 °C	-20 ... +74 °C
	-40 ... +72 °C	-20 ... +89 °C
	-40 ... +85 °C	-20 ... +90 °C

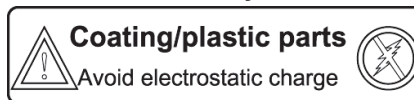
If the LEVEL TRANSMITTER LT8176.C***H***, LT8177.C***H*** are operated at higher temperatures than those specified in the above table, please make sure by means of appropriate measures that there is no danger of ignition from these hot surfaces, under consideration of the 6 K self-warming on the transducer. The permissible temperature on the electronics/housing should not exceed the values specified in the above table.

The prerequisites for operation in the absence of explosive mixtures can be found in the manufacturer specifications.

Permissible operating pressure

For applications requiring instruments of category 1/2G, the process pressure of the media must be between 0.8 ... 1.1 bar.

5 Protection against static electricity



The ultrasonic sensors LEVEL TRANSMITTER LT8176.C***H***, LT8177.C***H*** have surfaces that can get electrostatically charged. A caution label on the housing refers to the safety measures that must be applied when the danger of electrostatic charges exists during operation and maintenance work.

Caution: Plastic parts! Danger of electrostatic charging!

- Avoid friction
- No dry cleaning
- Do not mount in pneumatic filling stream

6 Use of an overvoltage arrester

On request the ultrasonic sensors LEVEL TRANSMITTER LT8176.C***H***, LT8177.C***H*** can be connected to an overvoltage arrester.

If the ultrasonic sensors LEVEL TRANSMITTER LT8176.C***H***, LT8177.C***H*** are used as category 1/2G instruments, lightning protection measures according to EN 60079-14 chapter 12.3 are not required.

7 Grounding

LEVEL TRANSMITTER LT8176.C***H***, LT8177.C***H*** must be electrostatically (transition resistance $\leq 1 \text{ MOhm}$) grounded, e.g. via a ground connection terminal.

8 Material resistance

With applications requiring instruments of category 1/2G the LEVEL TRANSMITTER LT8176.C***H***, LT8177.C***H*** should only be used in media against which the wetted materials are sufficiently resistant.

9 Installation

To exclude the danger of mechanical damage, the LEVEL TRANSMITTER LT8176.C***H***, LT8177.C***H*** must be installed in such a way that the transducer is protected from environmental influences.

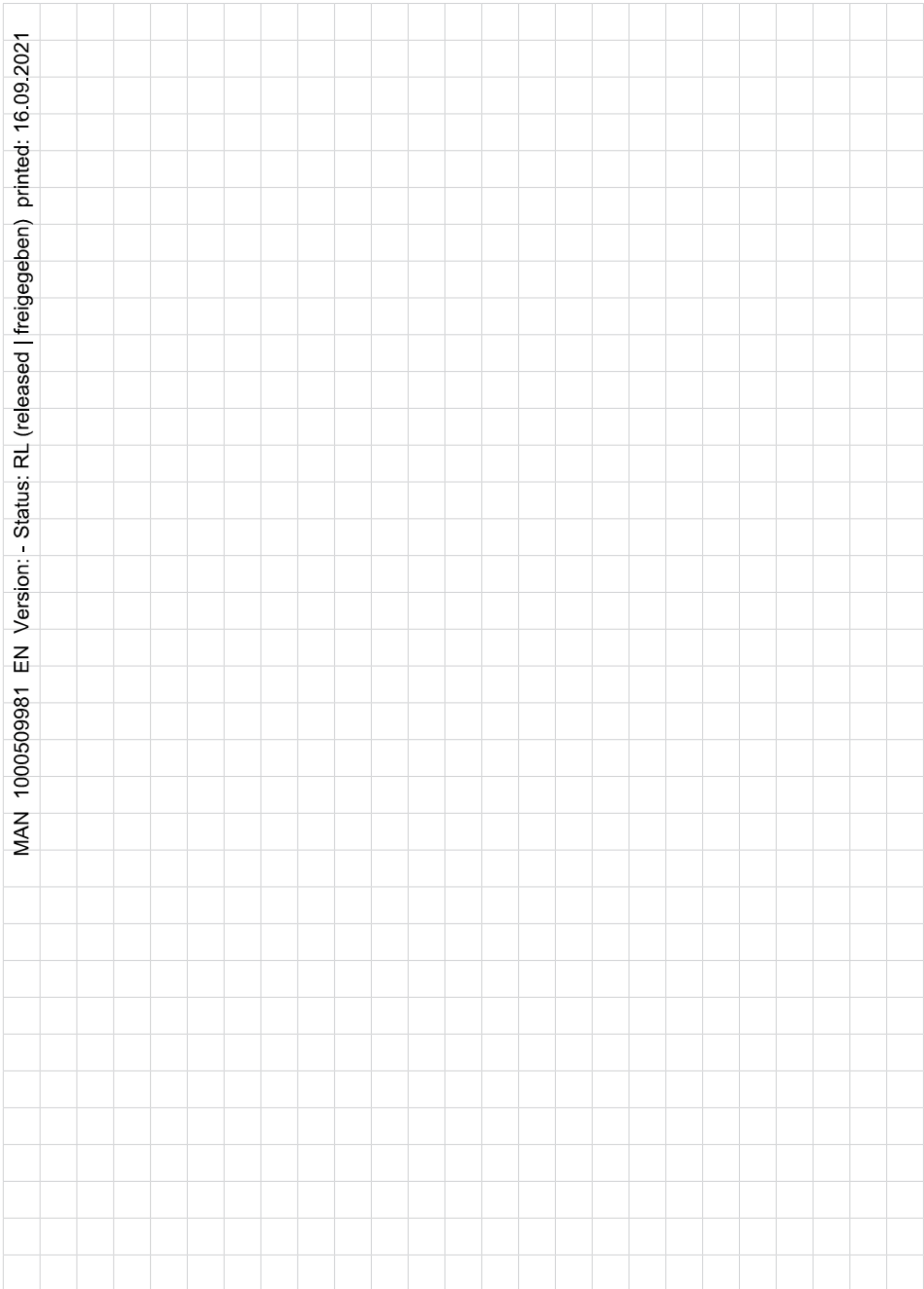
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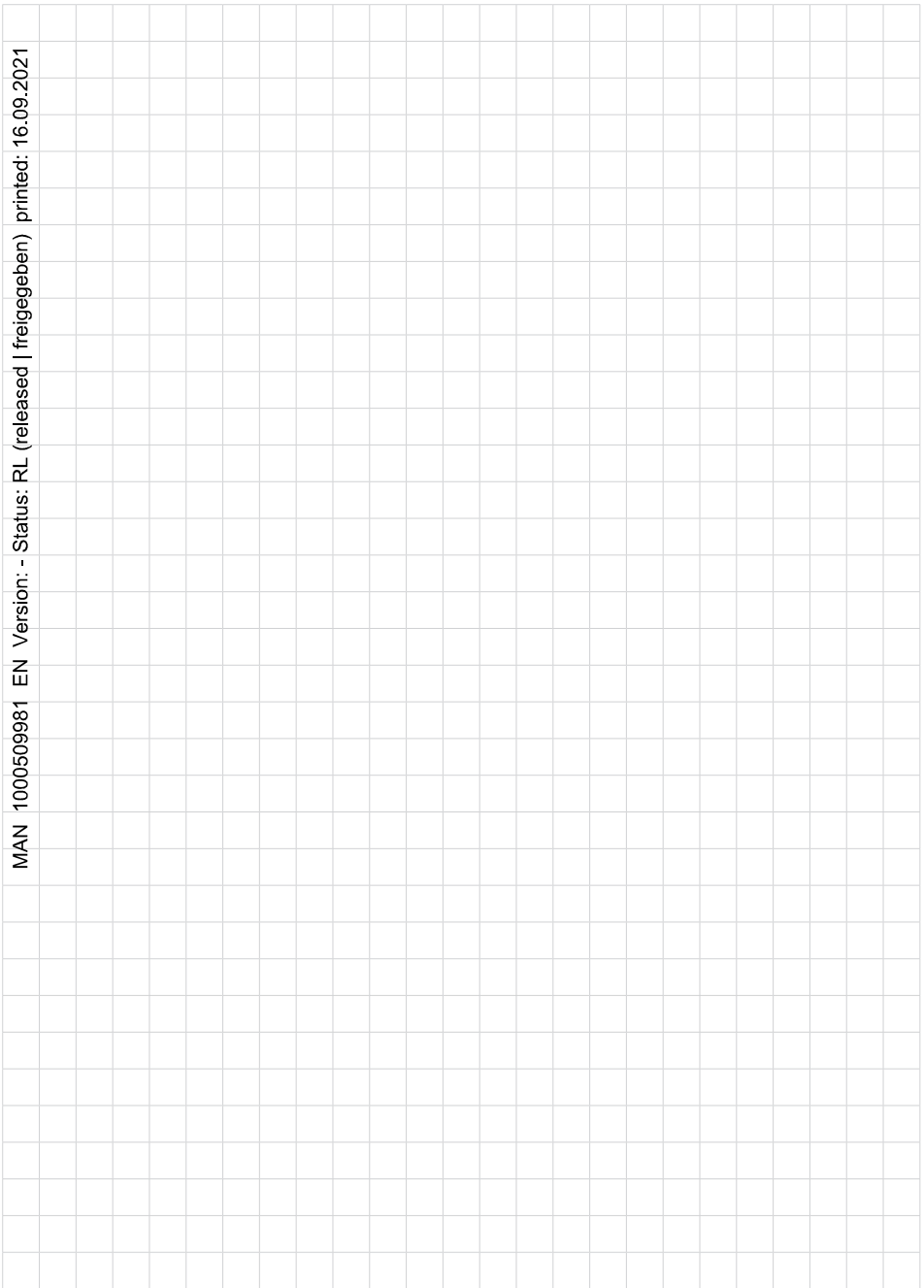
The page contains a large grid area for taking notes, consisting of approximately 25 columns and 45 rows of small squares.

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