



## Safety instructions



**LEVEL TRANSMITTER  
LT8138**

Intrinsic safety  
PTB 08 ATEX 2002 X  
Two-wire 4 ... 20 mA/HART



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Supplementary documentation:

- Operating Instructions LEVEL TRANSMITTER LT8138
- EU-type approval certificate PTB 08 ATEX 2002 X (Document ID: 43282)
- EU declaration of conformity (Document ID: 35643)

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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
SE	Säkerhetsanvisningar för användning i explosionsfarliga områden
DK	Sikkerhedsforskrifter til anvendelse i explosionsfarlig atmosfære
FI	Turvallisuusohjeet räjähdyksvaarallisissa tiloissa käyttöä varten
EL	Υποδείξεις ασφαλείας για τη χρησιμοποίηση σε περιοχές που υπάρχει κίνδυνος έκρηξης
EN	Die vorliegenden Sicherheitshinweise sind in den Sprachen deutsch, englisch, französisch und spanisch verfügbar. Weitere EU-Landessprachen stellt der Hersteller nach Anforderungen zur Verfügung.
EN	The present safety instructions are available in German, English, French and Spanish. Further EU languages will be provided by the manufacturer upon request.
FR	Les présentes consignes de sécurité sont disponibles dans les langues allemand, anglais, français et espagnol. Le fabricant met d'autres langues de l'Union Européenne à disposition en fonction des demandes.
ES	Las presentes instrucciones de seguridad están disponibles en los idiomas alemán, inglés, francés y español. El fabricante pone a disposición según demanda otros idiomas nacionales de la UE.

# 1 Area of applicability

These safety instructions apply to the radar sensor LEVEL TRANSMITTER LT8138 series LEVEL TRANSMITTER LT8138.C\*\*\*\*H\*\*\*\* according to EU type approval certificate PTB 08 ATEX 2002 X (Certificate number on the type label) and the number of the safety instruction (43285) on the type label.

The electronics module PS60HK is integrated in the LEVEL TRANSMITTER LT8138(\*).C\*\*\*\*H\*\*\*\*.

## 2 General information

The level measuring instrument LEVEL TRANSMITTER LT8138.C\*\*\*\*H\*\*\*\* is based on radar technology and is used to detect 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 LEVEL TRANSMITTER LT8138.C\*\*\*\*H\*\*\*\* consist of an electronics housing, a process connection element and a sensor (the antenna). As an option the display and adjustment module can also be integrated.

The measured products can also be combustible liquids, gases, mist or vapour.

The LEVEL TRANSMITTER LT8138.C\*\*\*\*H\*\*\*\* are suitable for use in hazardous atmospheres of all combustible materials of explosion group IIA, IIB and IIC for applications requiring instruments of category 1/2G or category 2G.

If the LEVEL TRANSMITTER LT8138.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-endangered systems must always be carried out by qualified personnel.

### Category 1/2G instruments

The electronics housing 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 antenna system with the mechanical fixing element is installed in hazardous areas requiring instruments of category 1G.

### Category 2G instruments

The LEVEL TRANSMITTER LT8138.C\*\*\*\*H\*\*\*\* are installed in hazardous areas requiring an instrument of category 2G.

### Ignition protection type:

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

# 3 Important specification in the type code

## LEVEL TRANSMITTER LT8138.abcdefghij

Position		Feature	Description
ab	Approval	CX	ATEX II 1/2G, 2G Ex ia IIC T6
c	Version / Material	*	with encapsulated horn antenna; One-digit alphanumeric variable for hygienically encapsulated horn antenna with different hygienical-ly materials

Position		Feature	Description
Printed: 15.06.2021	Process fitting / Material	**	Clamp, slotted nut, flanges; two-digit alphanumeric code for metallic process fittings, industrial flanges according to ASME, BS, DIN, EN, GOST, HG/T, JIS and for other international, national or industrial standards, guidelines or standards with suitable pressure and temperature specifications
	Electronics	H	Two-wire 4 ... 20 mA/HART
Released: RL	Housing / Protection	K	Plastic single chamber / IP66/IP67
	Cable entry / Cable gland / Plug connection	M	M20 x 1.5 / with / without
Version: EN	Display and adjustment module PLICSCOM	*	One-digit alphanumeric code for further suitable fittings, cable entries and closing screws.
		X	without
		A	mounted
		F	without; lid with inspection window
		K	mounted; with Bluetooth, magnetic pen operation
Status: RL	Additional equipment	X	without
		*	with equipment

In the following, all above mentioned versions are called LEVEL TRANSMITTER LT8138.C\*\*\*\*H\*\*\*\*. If parts of these safety instructions refer only to certain versions, then these will be mentioned explicitly with their type code.

## 4 Technical data

### Electrical data

#### Type of protection intrinsic safety Ex i

Power supply and signal circuit: (terminals 1[+], 2[-] in "Ex-i" electronics compartment; with double chamber housing version in connection compartment)

In type of protection intrinsic safety Ex ia IIC  
 Only for connection to a certified, intrinsically safe circuit.  
 Maximum values:

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

The effective internal capacitance  $C_i$  is negligibly small.  
 Effective internal inductance  $L_i \leq 5 \mu\text{H}$ .

Circuit of the display and adjustment module:

In type of protection intrinsic safety Ex ia IIC  
 Only for connection to the corresponding display and adjustment module AB-MODUL-BUERKERT resp. AB-MODUL-B1 (TÜV 19 ATEX 250180 U).

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 LT8138.C\*\*\*\*H\*\*\*\* is preferably connected to appropriate instruments with electrically isolated

intrinsically safe circuits.

The metal parts of the level measuring instruments on radar basis type LEVEL TRANSMITTER LT8138 are electrically connected to the earth terminals.

In the versions of the radar sensors LEVEL TRANSMITTER LT8138.C\*\*\*\*H\*\*\*\* the intrinsically safe circuits are electrically isolated from elements that may be earthed.

## 5 Application conditions

The max. permissible ambient temperatures depending on the temperature classes are specified in the following tables.

For assessment and reduction of the explosion risk, valid standards such as for example EN 1127-1 must be taken into account.

### Category 1/2G instruments

Temperature class	Temperature on the antenna	Ambient temperature on the electronics
	-20 ... +60 °C	-40 ... +46 °C
	-20 ... +60 °C	-40 ... +61 °C
T3, T2, T1	-20 ... +60 °C	-40 ... +80 °C

For applications requiring instruments of category 1/2G the process pressure of the media must be between 0.8 ... 1.1 bar. If the LEVEL TRANSMITTER LT8138.C\*\*\*\*H\*\*\*\* are operated at temperatures higher than those specified in the above table, please make sure by means of appropriate measures that there is no danger of ignition from the hot surfaces. The max. permissible temperature on the electronics/housing should not exceed the values according to the above table.

Please make sure that the sensor also in case of failure does not generate heat itself. Responsibility for safe operation of the equipment, with respect to pressures/temperatures of the materials used, rests with the operator.

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

### Category 2G instruments

Temperature class	Temperature on the antenna	Ambient temperature on the electronics
T6	-60 ... +80 °C	-40 ... +46 °C
T5	-60 ... +95 °C	-40 ... +61 °C
T4	-60 ... +130 °C	-40 ... +80 °C
T3, T2, T1	-60 ... +195 °C	-40 ... +80 °C

If the LEVEL TRANSMITTER LT8138.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 hot surfaces. The max. permissible temperature on the electronics/housing must not exceed the values specified in the above table.

Please make sure that the sensor also in case of failure does not generate heat itself. Responsibility for safe operation of the equipment, with respect to pressures/temperatures of the materials used, rests with the operator.

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

**Category 2G instrument - low temperature version up to -170 °C**

Temperature class	Temperature on the antenna	Ambient temperature on the electronics
T2, T1	-170 ... +80 °C	-40 ... +46 °C
	-170 ... +95 °C	-40 ... +61 °C
	-170 ... +130 °C	-40 ... +80 °C
	-170 ... +195 °C	-40 ... +80 °C

If the LEVEL TRANSMITTER LT8138.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 hot surfaces. The max. permissible temperature on the electronics/housing must not exceed the values specified in the above table.

Please make sure that the sensor also in case of failure does not generate heat itself. Responsibility for safe operation of the equipment, with respect to pressures/temperatures of the materials used, rests with the operator.

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

**6 Protection against static electricity**

The LEVEL TRANSMITTER LT8138.C\*\*\*\*H\*\*\*\* in versions with electrostatically chargeable plastic parts, such as e.g. plastic housing, metal housing with inspection window or plastic antenna, have a caution label pointing out the safety measures that must be taken with regard to electrostatic charges during operation.

WARNING - POTENTIAL ELECTROSTATIC CHARGING HAZARD - SEE INSTRUCTIONS

Caution: Plastic parts! Danger of electrostatic charging!

- Avoid friction
- No dry cleaning
- Construction/Installation: The LEVEL TRANSMITTER LT8138.C\*\*\*\*H\*\*\*\* must be constructed/installed in such a way that
  - electrostatic charges are ruled out during operation, maintenance and cleaning.
  - process-related electrostatic charges, e.g. by measuring media flowing past, are ruled out

**7 Use of an overvoltage arrester**

If necessary, a suitable overvoltage arrester can be connected in front of the LEVEL TRANSMITTER LT8138.C\*\*\*\*H\*\*\*\*.

When used as category 1/2G instrument, as far as necessary analogue, a suitable overvoltage arrester must be connected in front as protection against voltage surges according to EN 60079-14.

**8 Grounding**

In order to avoid the danger of electrostatic charging of the metallic parts, the LEVEL TRANSMITTER LT8138.C\*\*\*\*H\*\*\*\*, used as category 1/2G instrument, must be electrostatically connected to the local potential equalisation (transfer resistance ≤ 1 MΩ), e.g. via the ground terminal.

Metallic adapter flanges must be earthed, especially when installed on non-conductive plastic vessels or non-earthed vessels. Earthing can be realised with cable lug via the flange gland.

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## 9 Impact and friction sparks

The LEVEL TRANSMITTER LT8138.C\*\*\*\*H\*\*\*\* in Aluminium/Titanium version must be mounted in such a way that sparks from impact and friction between Aluminium/Titanium and steel (except stainless steel, if the presence of rust particles can be excluded) cannot occur.

## 10 Non-grounded, metallic parts

The capacitance of the metal measuring point identification plate was measured as follows:

Measurement loop identification label	Capacitance
42 x 23 mm (standard)	21 pF
160 x 30 mm	52 pF
72 x 47 mm	61 pF

The capacitance of the metal housing was measured with 31 pF.

## 11 Material resistance

With applications requiring instruments of category 1/2G the LEVEL TRANSMITTER LT8138.C\*\*\*\*H\*\*\*\* should only be used in media against which the wetted materials are sufficiently resistant.

## 12 Removing and replacing the red threaded/dust cover

When the LEVEL TRANSMITTER LT8138.C\*\*\*\*H\*\*\*\* are delivered, depending on the version, the red threaded or dust protection caps must be removed before installing the device and the openings must be sealed according to the requirements of the type of protection and the IP protection type specified on the type label.

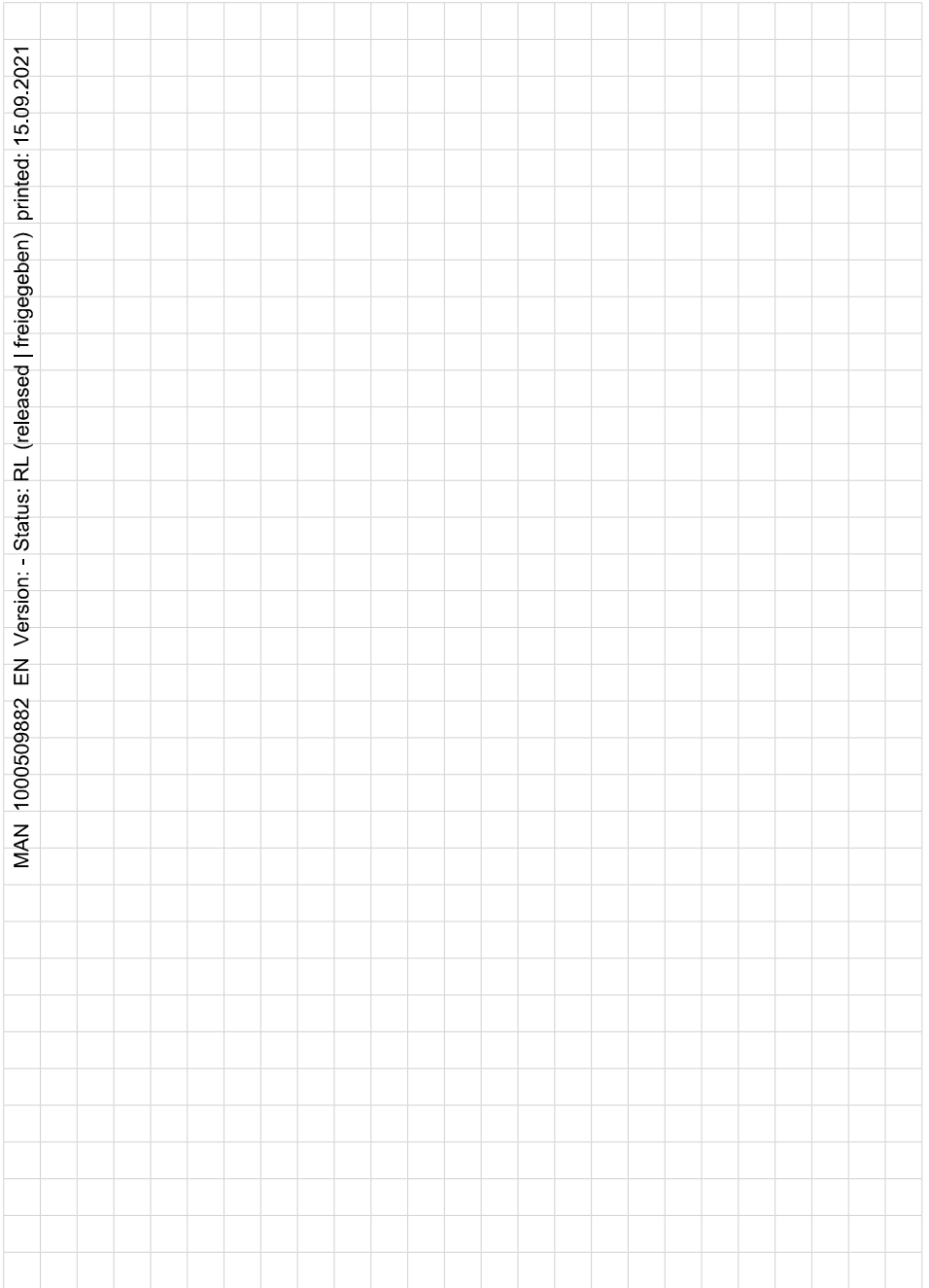
When using certified i.e. suitable cable glands, sealing plugs or plug connectors, they must be mounted correctly and the respective certificates/documents must be observed.

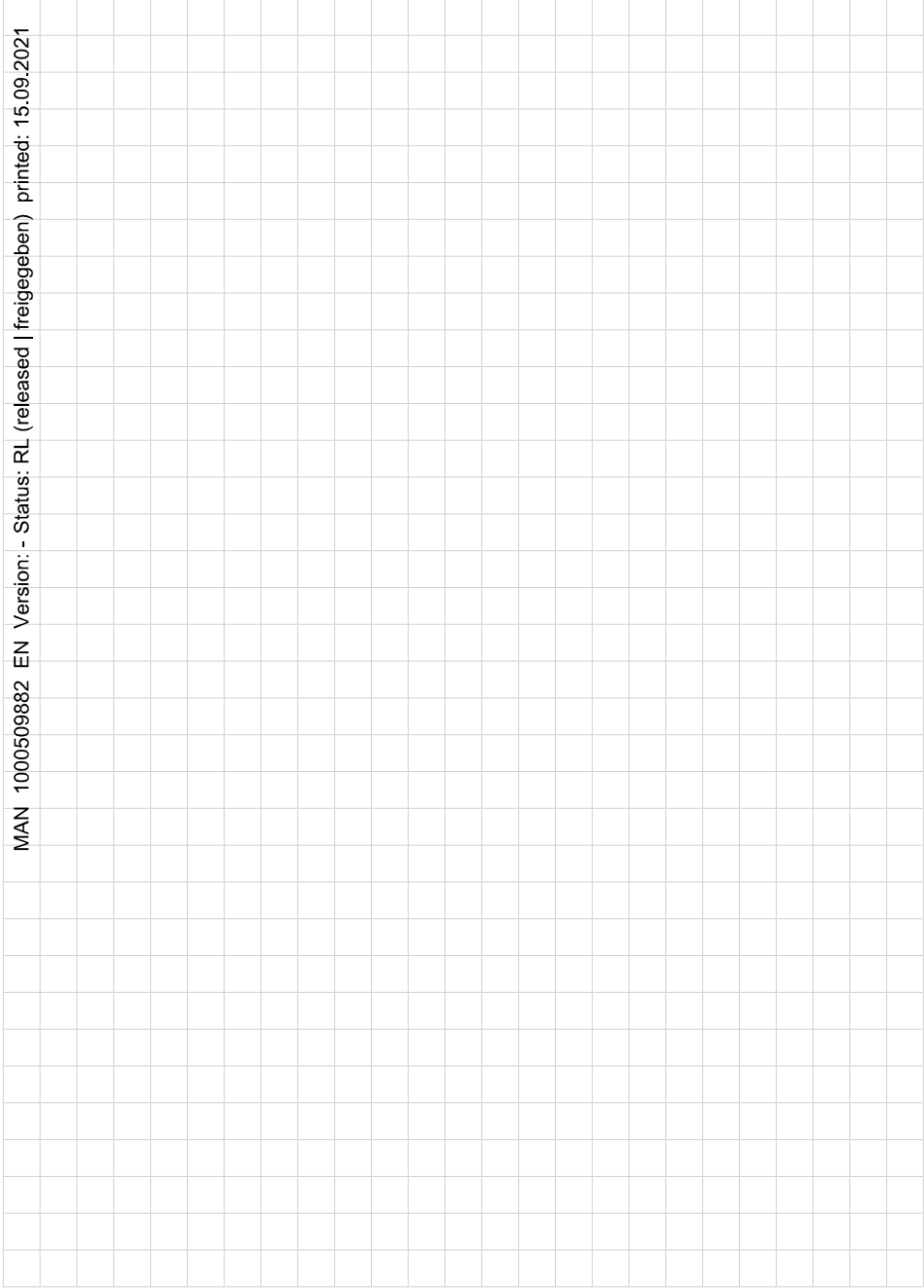
The sealing plugs supplied by the manufacturer meet the necessary requirements.



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