Instructions

IECEx TUN 04.0006X

Level Sensor TORRIX Ex …

Edition: 05.2012

I Range of application

The intrinsically safe equipment TORRIX Ex ... is used for the continuous measurement of liquid levels. The magnetostrictive measurement system detects the filling level by means of a float and the water level in case of a second float. These move up and down the probe tube.

II Standards

See latest IECEx certificate of conformity.

III Instructions for safe …

III.a … use

The sensor is designed as intrinsically safe apparatus and is approved for use in potentially explosive areas. The level sensor can be installed in Ex Zone 0 and is suitable for all gas groups (IIA, IIB and IIC).

A plastic float for LPG tanks can be used, as inside LPG tanks no explosive atmosphere is present.

The approval applies for all types TORRIX Ex ...

III.b … assembling and dismantling

TORRIX Ex … (without process connection)

If the level sensor is supplied without process connection, the installer is responsible for compliance with the Ex requirements.

With a riser installation the plastic centring aid is plugged onto the sensor head. Then let the sensor slide in the riser until it stands firmly on the bottom.

TORRIX Ex E …

Seal the threads of the screw in unit with a suitable sealing material, screw it into the existing socket and tighten it.

In the case of installation with a cutting ring coupling, it is no longer possible to alter the position of the level sensor after the union nut has been tightened.

TORRIX Ex F … and TORRIX Ex TAG-…

The probe tube is permanently fixed to the flange, which means that the installation length cannot be altered. Seal the flange with a suitable sealing and fix it with flange bolts or nuts.

TORRIX Ex … Flex …

This type can be manufactured with different probe feet, which are used to stabilize the probe. A foot can be a magnetic base. The magnet is then encapsulated in an electrically conductive plastic and may therefore be used in explosion hazardous areas.

General remark (see also IEC 60079-26, clause 4.6):

Attention must be paid, if the level sensor is built into the boundary wall between Zone 0 and Zone 1, that a protection class of at least IP67 is achieved after installation.

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III.c … Installation

All wiring operations must solely be carried out with the power disconnected. The special regulations including IEC 60079-14 and local installation regulations must be observed.

TORRIX Ex … (4 … 20 mA) and TORRIX Ex … HART …

The level sensor has a two-pole electrical connector. The level signal is included in the supply current. In addition, using TORRIX Ex ... HART ... it can be communicated with the sensor via HART protocol.

TORRIX Ex … SC …

The level sensor has a four-pole electrical connector. The level signal is transmitted in a digital, serial communication.

TORRIX Ex TAG-…

The level sensor has a two-pole electrical connector. The level signal is transmitted in accordance with the standard EN 14116.

Via the connector, the sensor is powered and the level signal is forwarded simultaneously to the parent measurement converter. The wiring from the sensor to the measurement converter shall be carried out using a two- or four-wire cable (preferably blue). The terminals on the sensor must be connected to the same terminals on the transducer.

For integration into the equipotential bonding a PA terminal is present at the sensor head.

III.d … putting into service

Before putting into service, all devices must be checked of right connection and fitting. The power supply, as well of connected devices, must be checked.

III.e … maintenance, overhaul and repair

Generally the device is maintenance-free. In case of a defect it must be send back to FAFNIR or one of his representations.

IV Marking

1	Manufacturer:	FAFNIR GmbH, Hamburg
2	Type designation:	TORRIX Ex …
3	Serial number:	Ser. N°: …
4	Certificate number:	IECEx TUN 04.0006X
5	Ex marking:	Ex ia IIC/IIB T4 Ga Ex ia IIC/IIB T6 Ga/Gb Ex ia IIC/IIB T6 Gb
6	Electrical data:	U_i ≤ 30 V I_i ≤ 200 mA P_i ≤ 1 W L_i < 50 µH C_i < 5 nF

Electrical data for the level sensor TORRIX Ex … SC …

U_i ≤ 15 V
I_i ≤ 60 mA
P_i ≤ 100 mW
C_i < 10 nF
L_i < 100 µH

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V Technical Data

The following safety-related values are defined with:

Input voltage:	U_i	≤	30 V	(15 V)*
Input current:	I_i	≤	200 mA	(60 mA)*
Input power:	P_i	≤	1 W	(100 mW)*

The externally effective capacitance and inductance are:

Internal capacitance:	C_i	<	5 nF	(10 nF)*
Internal inductance:	L_i	<	50 µH	(100 µH)*

When used in potentially explosive atmospheres, the maximum temperatures depending on the temperature classes and categories can be found in the table.

Temperature class	T_a	T_F
Equipment protection level Ga (level sensor entirely erected in Zone 0)		
T4, T3, T2, T1	-20 °C … +60 °C	
Equipment protection level Ga/Gb (probe tube erected in Zone 0, sensor head erected in Zone 1)		
T6	-40 °C … +40 °C (+50 °C)*	-20 °C … +60 °C
T5	-40 °C … +55 °C (+65 °C)*	
T4, T3, T2, T1	-40 °C ... +85 °C (+75 °C)*	
Equipment protection level Gb (level sensor entirely erected in Zone 1)		
T6	-40 °C … +40 °C (+50 °C)*	-40 °C ... +85 °C
T5	-40 °C … +55 °C (+65 °C)*	-40 °C ... +100 °C
T4	-40 °C ... +85 °C (+75 °C)*	-40 °C ... +135 °C
T3		-40 °C ... +200 °C
T2		-40 °C ... +300 °C
T1		-40 °C ... +450 °C

It must be ensured through appropriate measures that at no point on the sensor head the temperature (T_a) for the respective temperature class is exceeded.

General remark (see also IEC 60079-0, clause 1):

Zone 0 is given only under atmospheric conditions:

Temperature range:	-20 °C … +60 °C
Pressure range:	0.8 bar … 1.1 bar
Oxidants:	Air (oxygen content of about 21 %)

VI Special conditions

1. If titanium floats are used, care must be taken during the installation and the operation that these floats cannot cause any frictional and impact sparks.
2. The level gauge isn't signed with the permitted ambient temperature and the liquid temperature. The relation between the temperature code, the permitted ambient temperature (T_a) and the permitted liquid temperature (T_F) shows the above tables or the IECEx certificate of conformity.

*Values in parentheses are valid for level sensor TORRIX Ex … SC …

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