

## Instructions Level Gauge CONDURIX Ex ...

Edition: 04.2011

### I Range of application

The intrinsically safe equipment CONDURIX Ex ... is used for the continuous measurement of liquid levels. The level sensor operates only in electrically conductive liquids (conductivity  $\geq 1 \frac{\mu\text{S}}{\text{cm}}$ ). If the level sensor is inserted into a tank with non-conducting wall, the sensor must be equipped with a backplate electrode, e. g. the CONDURIX Ex MA ...

### II Standards

See EC-Type Examination Certificate.

### III Instructions for safe ...

#### III.a ... use

The approval applies to the following types respectively device versions:

- CONDURIX Ex ... Mono
- CONDURIX Ex ... DU
- CONDURIX Ex ... MA
- CONDURIX Ex E HY
- CONDURIX Ex E ... V
- CONDURIX Ex ... extern
- CONDURIX Ex ... extern Steck
- CONDURIX Ex ... M12

All level sensors CONDURIX Ex ... can be produced with plastic insulation (e. g. PEEK, PTFE) or ceramic with O ring seal.

In order to vary the height the version CONDURIX Ex E ... V is provided. The process connection is done via a cutting ring coupling.

With limited mounting space the electronics may be installed in an external enclosure (CONDURIX Ex ... extern). The connection to the sensor can be done via a fixed cable or via a connector (e. g. LEMO).

The level sensor CONDURIX Ex ... HART has in addition to the current signal a digital communication capability supported by the HART protocol. This allows a highly flexible programming and operation of the level sensor.

#### III.b ... mounting

Screw-in unit:

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.

Flange:

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.

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

### III.c ... installation

The level sensor has a two-pole electrical connector. Via this two pole connector, the sensor is powered and the level signal is forwarded simultaneously to the parent transducer.

All wiring operations must solely be carried out with the power disconnected. The special EN-regulations including EN 60079-14 and local installation regulations must be observed. The wiring from the sensor to the transducer shall be carried out using a two-wire cable (preferably blue). The terminals + and - of the sensor must be connected to the same terminals of the transducer.

The PA terminal is located at the bottom of the probe head and must securely be attached to the tank.


### 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 the upstream devices, must be checked.



### III.e ... maintenance, overhaul and repair

The device is maintenance-free. In case of a defect, please send back the level sensor to the manufacturer FAFNIR.

## IV Equipment marking

- |   |                     |  |
|---|---------------------|--|
| 1 | Manufacturer:       | FAFNIR GmbH, Hamburg   |
| 2 | Type designation:   | CONDURIX Ex ...  |
| 3 | Serial Number:      | Ser. N°: ...   |
| 4 | Certificate Number: | TÜV 11 ATEX 078858   |
| 5 | Ex marking:         | <br>II 1 G Ex ia IIC/IIB T6 Ga<br>II 1/2 G Ex ia IIC/IIB T6 Ga/Gb |

Different marking for the level sensor CONDURIX Ex E HY

- |   |                  |   |
|---|------------------|---|
|   |                  | <br>II 1 G Ex ia IIB T6 Ga<br>II 1/2 G Ex ia IIB T6 Ga/Gb    |
| 6 | Temperature:     | Zone 0: -20 °C ... +45 °C (T6), +60 °C (T5, T4)<br>Zone 0/1: -40 °C ... +45 °C (T6), +60 °C (T5), +85 °C (T4)                                   |
| 7 | CE marking:      |  0044  |
| 8 | Electrical data: | $U_i \leq 30 \text{ V}$<br>$I_i \leq 200 \text{ mA}$<br>$P_i \leq 1 \text{ W}$<br>$C_i \leq 5 \text{ nF}$<br>$L_i \leq 30 \text{ } \mu\text{H}$ |

## V Technical data

The level sensor is connected to a 4 ... 20 mA interface, which provides the auxiliary energy simultaneously. The connection is via the + and - terminals. The sealing of the cable is given by a cable entry or by a conduit system. Also an M12 plug-in connection can be used for the interface, pin 1 (+) and pin 3 (-).

Power supply:  $U = 8 \text{ V} \dots 30 \text{ V d.c.}$

The following safety-related values are defined with:

Input voltage:  $U_i \leq 30 \text{ V}$   
 Input current:  $I_i \leq 200 \text{ mA}$   
 Input power:  $P_i \leq 1 \text{ W}$

The externally effective capacitance and inductance are:

Internal capacitance:  $C_i \leq 5 \text{ nF}$   
 Internal inductance:  $L_i \leq 30 \text{ } \mu\text{H}$

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

Temperature class	$T_{\text{medium}}$ resp. $T_{\text{probe tube}}$	$T_{\text{ambient}}$ resp. $T_{\text{probe head}}$
<b>Category 1 (level sensor entirely erected in Zone 0)</b>		
T6	-20 °C ... +45 °C	
T5, T4, T3, T2, T1	-20 °C ... +60 °C	
<b>Category 1/2 (probe tube erected in Zone 0, sensor head erected in Zone 1)</b>		
T6	-20 °C ... +60 °C	-40 °C ... +45 °C
T5		-40 °C ... +60 °C
T4, T3, T2, T1		-40 °C ... +85 °C
<b>Category 2 (level sensor entirely erected in Zone 1)</b>		
T6	-40 °C ... +85 °C	-40 °C ... +45 °C
T5	-40 °C ... +100 °C	-40 °C ... +60 °C
T4	-40 °C ... +135 °C	-40 °C ... +85 °C
T3	-40 °C ... +200 °C	
T2	-40 °C ... +300 °C	
T1	-40 °C ... +450 °C	

If the probe tube is operated at higher liquid temperatures as listed in the table, it must be ensured through appropriate measures that at no point of the probe, the temperature ( $T_{\text{ambient}}$ ) will be exceeded according to the relevant temperature class.

General Note: Zone 0 is given only under atmospheric conditions (see EN 60079-0):

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