



(1) EC-TYPE-EXAMINATION CERTIFICATE (Translation)

(2) Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres - **Directive 94/9/EC**

(3) EC-type-examination Certificate Number:

PTB 07 ATEX 2003 X



(4) Equipment: Ultrasonic sensors, type series LEVEL TRANSMITTER LT8176.C***H***, LT8177.C***H*** with integrated electronic assemblies SN61-63H

(5) Manufacturer: Bürkert Werke GmbH&Co.KG

(6) Address: Christian-Bürkert-Straße 13-17, 74653 Ingelfingen, Germany

(7) This equipment and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

(8) The Physikalisch-Technische Bundesanstalt, notified body No. 0102 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II to the Directive.

The examination and test results are recorded in the confidential report PTB Ex 07-27021.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 50014: 1997 + A1 + A2

EN 50020:2002

EN 50284:1999

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This EC-type-examination Certificate relates only to the design, examination and tests of the specified equipment in accordance to the Directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.

(12) The marking of the equipment shall include the following:

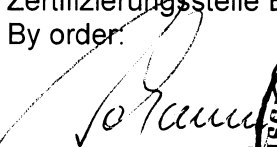


II 1/2 G bzw. II 2 G EEx ia IIC T6

Zertifizierungsstelle Explosionsschutz

By order:

Braunschweig, April 18, 2007


Dr.-Ing. U. Johannsmeier
Direktor und Professor



SCHEDULE

(13)

(14) **EC-TYPE-EXAMINATION CERTIFICATE PTB 07 ATEX 2003 X**

(15) Description of equipment

The ultrasonic sensors, type series LEVEL TRANSMITTER LT8176.C***H*** and LT8177.C***H*** with integrated electronic assemblies SN61-63H, are used for level measurement in potentially explosive atmospheres requiring category-1/2 or category-2 equipment. The enclosure may be optionally fitted with the control and display module AB-Modul.Bürkert for either parameterization or visualization.

The ultrasonic sensors consist of an electronics housing with the corresponding analyzing electronic system, the process connectors and the sensor.

Category-1/2 equipment

The electronics housing is installed in potentially explosive atmospheres requiring category-2 equipment. The process connectors are installed in the partition wall separating areas requiring category-2 or category-1 equipment. The sensor is installed in the potentially explosive atmosphere for category-1 equipment.

Category-2 equipment

The ultrasonic sensors are installed in potentially explosive atmospheres requiring category-2 equipment.

For the relationship between the temperature class and the maximum permissible temperature at the sensor and the maximum permissible ambient temperature for the electronic system, reference is made to the following table.

Category-1/2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-20 ... +58 °C	-40 ... +57 °C
T5	-20 ... +60 °C	-40 ... +72 °C
T4, T3, T2, T1	-20 ... +60 °C	-40 ... +85 °C

For applications requiring category-1 equipment, the media process pressure has to be between 0.8 bar and 1.1 bar. The permissible ambient temperatures specified are based on the 80 % rule in section 6.4.2 of EN 1127-1.

When the ultrasonic sensor LEVEL TRANSMITTER LT8176.C***H*** and LT8177.C***H*** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures, taking into account a temperature rise of the sensor of 6 K, that no ignition hazard is caused by such hot surfaces. In this case the temperature at the electronics housing shall not exceed the respective values of the table above.

For the process conditions without explosive mixtures, reference shall be made to the specifications provided by the manufacturer.

Category-2 equipment

temperature class	temperature at the sensor	ambient temperature for the electronic system
T6	-20 ... +74 °C	-40 ... +57 °C
T5	-20 ... +89 °C	-40 ... +72 °C
T4, T3, T2, T1	-20 ... +90 °C	-40 ... +85 °C

When the ultrasonic sensor LEVEL TRANSMITTER LT8176.C***H*** and LT8177.C***H*** are operated with higher temperatures than indicated in the table above, it shall be guaranteed by suitable measures, taking into account a temperature rise of the sensor of 6 K, that no ignition hazard is caused by such hot surfaces. In this case the temperature at the electronics housing shall not exceed the respective values of the table above.

For the permissible operating temperatures and pressures, reference shall be made to the specifications provided by the manufacturer.

Electrical data

Supply and signal circuit
(terminals 1[+] & 2[-] in the electronics compartment, for the 2-cell enclosure version in the terminal compartment)

Type of protection Intrinsic Safety EEx ia IIC
For connection to a certified intrinsically safe circuit.

Maximum values:

$U_i = 30 \text{ V}$

$I_i = 131 \text{ mA}$

$P_i = 983 \text{ mW}$

C_i negligibly low

L_i negligibly low

Control and display circuit
(terminals No. 5,6,7,8 in the electronics compartment or plug connector for the 2-cell version)

type of protection Intrinsic Safety EEx ia IIC
For connection to the intrinsically safe supply and signal circuit of an external display unit (PTB 02 ATEX 2136 X).

The rules for interconnection of intrinsically safe circuits between the ultrasonic sensor LEVEL TRANSMITTER LT8176.C***H*** or LT8177.C***H*** and the external display unit are complied with if the total inductance and capacitance of the connecting line between the ultrasonic sensor LEVEL TRANSMITTER LT8176.C***H*** or LT8177.C***H*** and the control and display module $L_{\text{cable}} = 100 \mu\text{H}$ and $C_{\text{cable}} = 2.8 \mu\text{F}$ is not exceeded.

A control and display module (AB-Module.Bürkert) installed in the LEVEL TRANSMITTER LT8176.C***H*** or LT8177.C***H*** and a connected interface converter have been considered.

Communication circuit (I²C-bus socket in the electronics compartment, and additionally for the 2-cell housing version in the terminal compartment)

Type of protection Intrinsic Safety EEx ia IIC
Only for connection to the intrinsically safe signal circuit of a interface converter (PTB 01 ATEX 2007).

Control and display module circuit (spring contacts in the electronics compartment, additionally for the 2-cell housing version in the terminal compartment.)

type of protection Intrinsic Safety EEx ia IIC
Only for connection to the control and display module (AB-Module.Bürkert).
With the 2-cell housing version, the control and terminal display module may be housed either in the electronics compartment or the terminal compartment.

The intrinsically safe circuits are safely electrically isolated from elements that may be earthed.

(16) Test report PTB Ex 07-27021

(17) Special conditions for safe use

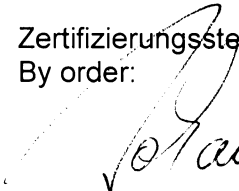
1. The ultrasonic sensors include surfaces that can become charged electrostatically (note warning label).
2. In case of danger of mechanical damage of the sound transducer the ultrasonic sensors shall be installed in such a way that the sound transducer is protected against mechanical damage from the environment.

(18) Essential health and safety requirements

Met by compliance with the standards mentioned above

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