Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

(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 05 ATEX 2062 X

(4) Equipment: Ultrasonic sensors, type series OPTISOUND 30*0 C VF 3*4.C***H***X with built-in electronic assembly SN61-63H

(5) Manufacturer: Krohne S.A.S.

(6) Address: Les Ors, 26103 Romans Cedex, France

(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 05-25157.

(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:

Ex II 1 G or II 1/2 G or II 2 G EEx ia IIC T6

Zertifizierungsstelle Explosionsschutz
By order:

(signature)

Dr.-Ing. U. Johannsmeyer
Direktor und Professor

Braunschweig, September 02, 2005

4 pages, correct and complete as regards content.
By order:

Dr.-Ing. Johannsmeyer
Direktor und Professor

Braunschweig, September 20, 2007

(13) # SCHEDULE

(14) ## EC-TYPE-EXAMINATION CERTIFICATE PTB 05 ATEX 2062 X

(15) Description of equipment

The ultrasonic sensors, type series OPTISOUND 30*0 C VF 3*4.C***H***X with built-in electronic assembly SN61-63H are used for the level measurement and they are installed in hazardous areas requiring equipment of category 1 or 1/2 or 2. An appropriate control and display module can be mounted alternatively into the enclosure for parameterization or visualization.

The ultrasonic sensors consist of an electronics enclosure with the associated analyzing electronic system, the process connection elements and the sensor.

Catergory-1-equipment

The ultrasonic sensors are installed in hazardous areas requiring category-1-equipment.

Catergory-1/2-equipment

The electronics enclosure is installed in hazardous areas requiring equipment of category 2. The process connection elements are mounted into the partition which separates areas from each other where equipment of category 2 or 1 is required. The sensor is installed in areas requiring equipment of category 1.

Catergory-2-equipment

The ultrasonic sensors are installed in hazardous areas requiring category-2-equipment.

For relationship between the temperature class, the maximum permissible temperature at the sensor and the maximum permissible ambient temperature in the area of the electronics, reference is made to the following table:

Catergory-1-equipment

Temperature class	Temperature at the sensor	Ambient temperature at the electronics
T6	-20 ... +41 °C	-20 ... +41 °C
T5	-20 ... +53 °C	-20 ... +53 °C
T4, T3, T2, T1	-20 ... +60 °C	-20 ... +60 °C

For applications requiring category-1 equipment, the media process pressure shall range from 0.8 bar to 1.1 bar. The specified permissible ambient temperatures are based on the 80% rule in section 6.4.2 of EN 1127-1. For the operating conditions without explosive mixtures, reference is made to the specifications provided by the manufacturer.

SCHEDULE TO EC-TYPE-EXAMINATION CERTIFICATE PTB 05 ATEX 2062 X

Catergory-1/2-equipment

Temperature class	Temperature at the sensor	Ambient temperature at the electronics
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 shall range from 0.8 bar to 1.1 bar. The specified permissible ambient temperatures are based on the 80% rule in section 6.4.2 of EN 1127-1. For the operating conditions without explosive mixtures, reference is made to the specifications provided by the manufacturer.

Catergory-2-equipment

Temperature class	Temperature at the sensor	Ambient temperature at the electronics
T6	-20 ... +74 °C	-40 ... +57 °C
T5	-20 ... +89 °C	-40 ... +72 °C
T4, T3, T2, T1	-20 ... +90 °C	-40 ... +85 °C

For the permissible temperatures and pressures for the operation, reference is made to the specifications provided by the manufacturer.

Electrical data

Supply and signal circuit (terminals 1 [+], 2 [-] in the electronic compartment, for the 2-chamber enclosure variant in the terminal compartment	type of protection Intrinsic Safety EEx ia IIC/IIB For connection to a certified intrinsically safe circuit. Maximum values: U_i = 30 V I_i = 131 mA P_i = 983 mW L_i negligibly low C_i negligibly low
Control and display module circuit (spring contacts in the electronic compartment, additionally in the terminal compartment for 2-chamber enclosure variant)	type of protection Intrinsic Safety EEx ia IIC For connection to the control and display module For the 2-chamber enclosure variant the control and display module may be installed either in the electronic compartment or the terminal compartment.

The metallic parts of the ultrasonic sensors are electrically connected to the earth terminal clamps.

The intrinsically safe supply and signal circuit is safely electrically isolated from parts which can be grounded.

SCHEDULE TO EC-TYPE-EXAMINATION CERTIFICATE PTB 05 ATEX 2062 X

(16) Test report PTB Ex 05-25157

(17) Special conditions for safe use

1. When applied as category-1-equipment those variants of the ultrasonic sensors, type series OPTISOUND 30*0 C VF 3*4.C***H***X with built-in electronic assembly SN61-63H, for which the material aluminium is used, shall be installed as such, that the generation of sparks due to impact or friction between aluminium and steel (with the exception of stainless steel if the existence of rust particles can be excluded) is impossible.
2. The ultrasonic sensors with a plastic enclosure, with enclosure parts made of plastic as well as the sensors provide surfaces which can charge electrostatically (observe warning label).
3. When there is the risk of a mechanical damage of the sonic transducers the OPTISOUND ultrasonic sensors shall be installed as such that the transducers are protected against stress from the environment.

(18) Essential health and safety requirements

met by compliance with the standards mentioned above

Zertifizierungsstelle Explosionsschutz
By order:

Braunschweig, September 02, 2005

(signature)

Dr.-Ing. U. Johannsmeyer
Direktor und Professor

Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

1. SUPPLEMENT

according to Directive 94/9/EC Annex III.6

to EC-TYPE-EXAMINATION CERTIFICATE PTB 05 ATEX 2062 X

(Translation)

Equipment: Ultrasonic sensors, type series OPTISOUND 30*0 C VF 3*4.C***H***X with built-in electronic assembly SN61-63H

Marking: Ⓔx **II 1 G or II 1/2 G or II 2 G EEx ia IIC T6**

Manufacturer: KROHNE S.A.S.

Address: Les Ors, 26103 Romans Cedex, France

Description of supplements and modifications

In the future the ultrasonic sensors of type series OPTISOUND 30*0 C VF 3*4.C***H***X with built-in electronic assembly SN61-63H may also be manufactured and operated according to the test documents listed in the test report. The modifications concern the external construction (stainless steel forming housing and the use of a 2nd pressure compensation element), the internal construction, (electronical modifications), a part of the electrical data as well as the adaption to the current state of the standards series EN 60079-et sqq. and, therefore, the marking of the equipment.

In the future this will read: Ⓔx **II 1 G or II 1/2 G or II 2 G Ex ia IIC T6**

The following applies additionally to the operation as category 1/2-equipment or category 2-equipment:

When the ultrasonic sensors of type series OPTISOUND 30*0 C VF 3*4.C***H***X with built-in electronic assembly SN61-63H are operated with higher temperatures than indicated in the respective tables of the EC-type examination certificate, it shall be guaranteed by suitable measures that no ignition hazard is caused by such hot surfaces – considering a self-heating of the sensor of 6 K. In this case the temperature at the housing shall not exceed the values of the table applicable for the respective category.

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1. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 05 ATEX 2062 X

Electrical data	
Supply and signal circuit (terminals 1 [+], 2 [-] in the electronic compartment, for the 2-cell enclosure version in the terminal compartment)	type of protection Intrinsic Safety Ex ia IIC only for connection to a certified intrinsically safe circuit. Maximum values: U_i = 30 V I_i = 131 mA P_i = 983 mW C_i negligibly low or for the version with firmly connected cable $C_i'_{Core/Core}$ = 58 pF/m, $C_i'_{Core/Screen}$ = 270 pF/m L_i negligibly low or for the version with firmly connected cable L_i' = 55 µH/m
Control and display module circuit (spring contacts in the electronics compartment, for the 2-cell housing version additionally in the terminal compartment)	type of protection Intrinsic Safety Ex ia IIC Only for connection to the control and display module With the 2-cell housing version, the control and display module may be installed either in the electronics compartment or the terminal compartment.

All other data and specifications of the EC-type examination certificate as well as the "Special Conditions" apply without changes also to this 1st supplement.

Applied standards

EN 60079-0:2006 **EN 60079-11:2007** **EN 60079-26:2007**

Assessment and test report: PTB Ex 09-28270

Zertifizierungssektor Explosionsschutz
By order:

Braunschweig, February 2, 2009

Dr.-Ing. U. Johannsmeyer
Direktor und Professor