

(1) EC-TYPE EXAMINATION CERTIFICATE

(2) **Equipment and protective systems intended for use in potentially explosive atmospheres - Directive 94/9/EC**

(3) EC-Type Examination Certificate Number: **KEMA 03ATEX1092 X**

(4) Equipment: **Pressure / Level Transmitter Type 2000, 2000-SAN, CER-2000 and 2000 Hydrobar Cable, Temperature Transmitter Type TT2000 and Level Transmitter Type HYDROBAR-I.**

(5) Manufacturer: **Klay-Instruments B.V.**

(6) Address: **Nijverheidsweg 5, 7991 CZ Dwingeloo, The Netherlands**

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

(8) KEMA Quality B.V., notified body number 0344 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 confidential test report no. 2082114.

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

**EN 50014 : 1997 + A1, A2
EN 50284 : 1999**

**EN 50020 : 2002
EN 50281-1-1 : 1998 + A1**

(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 according 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 G EEx ia IIC T4

or

II 1 GD EEx ia IIC T4 T 100 °C IP 6X

Arnhem, 29 March 2006
KEMA Quality B.V.

C.G. van Es
Certification Manager

Reissue
Page 1/3



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(13) **SCHEDULE**

(14) **to EC-Type Examination Certificate KEMA 06ATEX1092 X**

(15) **Description**

The Pressure / Level Transmitter Type 2000, 2000-SAN, CER-2000 and 2000 Hydrobar Cable, Temperature Transmitter Type TT2000 and Level Transmitter Type HYDROBAR-I convert a pressure, level or temperature signal from a sensor into a 4 - 20 mA current signal with a superimposed digital signal (HART protocol).

The relation between Transmitter type and options, equipment category and ambient temperature range is shown in the table below:

Transmitter Type and Options	Equipment category	Ambient temperature range
Pressure / Level Transmitter Type 2000, 2000-SAN, CER-2000 and 2000 Hydrobar Cable, Temperature Transmitter Type TT2000 with transparent indicator cover (Option I)	II 1 G	-10 °C ... +70 °C
Pressure / Level Transmitter Type 2000, 2000-SAN, CER-2000 and 2000 Hydrobar Cable, Temperature Transmitter Type TT2000 with closed cover	II 1 G	-20 °C ... +70 °C
Pressure / Level Transmitter Type 2000, 2000-SAN, CER-2000 and 2000 Hydrobar Cable, Temperature Transmitter Type TT2000 with Option G100	II 1 GD	-20 °C ... +70 °C
Level Transmitter Type HYDROBAR-I	II 1 GD	-20 °C ... +70 °C

The maximum surface temperature of the enclosure T 100 °C is based on a maximum ambient temperature of 70 °C. This temperature is determined with a dust layer of maximum 5 mm.

Electrical data

Pressure / Level Transmitter Type 2000, 2000-SAN, CER-2000 and 2000 Hydrobar Cable, Temperature Transmitter Type TT2000

Supply and output circuit in type of protection intrinsic safety EEx ia IIC, (terminals 3 and 4) only for connection to a certified intrinsically safe circuit, with the following maximum values:

U_i	=	30	V
I_i	=	110	mA
P_i	=	0,83	W
C_i	=	7,5	nF
L_i	=	73	μ H



(13) **SCHEDULE**

(14) **to EC-Type Examination Certificate KEMA 06ATEX1092 X**

Level Transmitter Type HYDROBAR-I

Supply and output circuit in type of protection intrinsic safety EEx ia IIC,
(red and black wires) only for connection to a certified intrinsically safe circuit,
with the following maximum values:

$$\begin{aligned}
 U_i &= 30 \text{ V} \\
 I_i &= 110 \text{ mA} \\
 P_i &= 0,83 \text{ W}
 \end{aligned}$$

The effective internal capacitance C_i is dependent upon the length of the extension cable and is $13 \text{ nF} + 0,38 \text{ nF per meter extension cable}$.

The effective internal inductance L_i is dependent upon the length of the extension cable and is $73 \text{ } \mu\text{H} + 1 \text{ } \mu\text{H per meter extension cable}$.

The maximum cable length is 100 m.

(16) **Test Report**

KEMA No. 2082114.

(17) **Special conditions for safe use**

As Category 1 G equipment may be applied directly in the process, electrostatic discharge from the cable and the protection cap of Pressure / Level Transmitter 2000 Hydrobar Cable and Level Transmitter Type HYDROBAR-I by the flow of non-conductive media (e.g. in stirring vessels or pipes) shall be avoided.

For use in a potentially explosive atmosphere caused by air/dust mixtures the following applies:

- the dust layer may not exceed a thickness of 5 mm;
- the free end of the permanently connected cable of Level Transmitter Hydrobar-I must be connected outside the hazardous area or, when inside the hazardous area, in an enclosure in accordance with the requirements of the type of protection applied.

For ambient temperature range see (15).

(18) **Essential Health and Safety Requirements**

Assured by compliance with the standards listed at (9).

(19) **Test documentation**

As listed in Test Report No. 2082114.