



## (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 02 ATEX 2107**



(4) Equipment: Temperature Transmitter ThermoTrans Model 2\*\* A7 Opt. ...

(5) Manufacturer: Knick Elektronische Messgeräte GmbH & Co.

(6) Address: Beuckestr. 22, 14163 Berlin, 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 02-22171.

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

**EN 50014:1997 + A1 + A2**

**EN 50020:1994**

(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) G [EEx ia] IIC

Zertifizierungsstelle Explosionsschutz  
By order:

Braunschweig, August 27, 2002

Dr.-Ing. U. Johannsmeyer  
Regierungsdirektor



sheet 1/4

EC-type-examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt. In case of dispute, the German text shall prevail.

## SCHEDULE

(13)

(14) **EC-TYPE-EXAMINATION CERTIFICATE PTB 02 ATEX 2107**

(15) Description of equipment

The temperature transmitter ThermoTrans Model 2\*\* A7 Opt. ... with its different variants is used for the detection of resistance-proportional measuring signals and of thermo-electromotive forces and their conversion to injected current and voltage signals into the output circuit.

The apparatus is installed outside hazardous areas.

The permissible range of the ambient temperature is -10 °C ... 60 °C.

### Electrical data

Auxiliary power circuit.....	230 V AC -15 % +10 %, approx. 2 VA
(terminals 7, 8)	115 V AC -15 % +10 %, approx. 2 VA
	24 V AC -15 % +10 %, approx. 1.5 VA
	24 V DC -15 % +20 %, approx. 1.2 W

Output circuit.....	I = 0 ... 20 mA
(terminals 5, 6)	U = 10 V
	U <sub>m</sub> = 253 V

### Types 20\* ...

Resistance measuring circuit ..... type of protection Intrinsic Safety EEx ia IIC  
(terminals 1, 2, 3, 4)

#### Maximum values:

U <sub>o</sub> =	6 V
I <sub>o</sub> =	13 mA
P <sub>o</sub> =	20 mW
R <sub>i</sub> =	480 Ω
linear characteristic	
L <sub>o</sub> =	3 mH
C <sub>o</sub> =	2200 nF
L <sub>i</sub>	negligibly low
C <sub>i</sub>	negligibly low

The resistance measuring circuit is safely electrically isolated from the auxiliary power circuit and from the output circuit up to a peak value of the nominal voltage of 375 V.

sheet 2/4

---

EC-type-examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt. In case of dispute, the German text shall prevail.

**Types 21\* ...**

Thermocouple measuring circuit..... type of protection Intrinsic Safety EEx ia IIC  
(terminals 1, 2)

Maximum values:

$U_o = 6 \text{ V}$   
 $I_o = 2.3 \text{ mA}$   
 $P_o = 3.5 \text{ mW}$   
 $R_i = 2600 \text{ } \Omega$   
linear characteristic  
 $L_o = 3 \text{ mH}$   
 $C_o = 2300 \text{ nF}$   
 $L_i$  negligibly low  
 $C_i = 1100 \text{ nF}$

resp.

for connection to a certified intrinsically safe circuit

Maximum values:

$U_i = 12 \text{ V}$   
 $I_i = 100 \text{ mA}$   
 $P_i = 250 \text{ mW}$   
 $L_i$  negligibly low  
 $C_i = 1100 \text{ nF}$

Pt 100-measuring circuit..... type of protection Intrinsic Safety EEx ia IIC  
(terminals 3, 4)

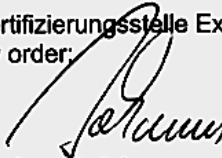
Maximum values:

$U_o = 6 \text{ V}$   
 $I_o = 5.5 \text{ mA}$   
 $P_o = 8.5 \text{ mW}$   
 $R_i = 1090 \text{ } \Omega$   
linear characteristic  
 $L_o = 3 \text{ mH}$   
 $C_o = 2300 \text{ nF}$   
 $L_i$  negligibly low  
 $C_i = 1100 \text{ nF}$

The thermocouple measuring circuit and the Pt 100-measuring circuit are electrically interconnected and safely electrically isolated from the auxiliary power circuit and the output circuit up to a peak value of the nominal voltage of 375 V.

- (16) Test report PTB Ex 02-22171
- (17) Special conditions for safe use  
none
- (18) Essential health and safety requirements  
met by the standards quoted

Zertifizierungsstelle Explosionsschutz  
By order:

  
Dr.-Ing. U. Johannsmeyer  
Regierungsdirektor



Braunschweig, August 27, 2002