

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 00 ATEX 2182

(4) Equipment: Temperature Input Module Typ TI4-Ex

(5) Manufacturer: ABB Automation Products

(6) Address: D-63755 Alzenau, 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 01-20429.

(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 and construction of the specified equipment in accordance with Directive 94/9/EC. Further requirements of this Directive apply to the manufacture and supply of this equipment.

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

 **II 2 (1) G EEx ib [ia] IIC T4**

Zertifizierungsstelle Explosionsschutz
By order:

Braunschweig,

Dr.-Ing. U. Johannsmeyer
Regierungsdirektor

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(13) **SCHEDULE**

(14) **EC-TYPE-EXAMINATION CERTIFICATE PTB 00 ATEX 2182**

(15) Description of equipment

The Temperature Input Module Type TI4-Ex is used in conjunction with the appropriate sensors for acquiring measurement values. Either thermocouples, resistance thermometers or other sensors with defined resistance and direct voltage can be connected, as required. The Temperature Input Module Type TI4-Ex is part of the S900 Remote I/O Fieldbus System in accordance with the separate EC Type Acceptance PTB 00 ATEX 2156 U. The Temperature Input Module Type TI4-Ex can be plugged and operated in the termination unit with backplane of the S900 Remote I/O Fieldbus System. When using the module with the appropriate housing, protection IP 20 is achieved.

Max. permissible ambient temperature range: -20°C to +70°C.

Electrical specifications

I.) AC power supply circuit

Type of protection "Intrinsic safety" EEx ib IIC/IIB;
only for connection to approved intrinsically
safe current circuits in accordance with
PTB 00 ATEX 2156 U.

Maximum values:

V = 20 V AC (amplitude)

f = 300 kHz ... 314 kHz

P = 1 W (power consumption)

C_i negligible

L_i negligible

The intrinsically safe AC power supply circuit has a safe electrical isolation from earth, and from all other intrinsically safe current circuits up to a peak value of the rated voltage of 60 V.

II.) Signal current circuit (CAN BUS)

(current circuit to be used within the system, exclusively; no external connections provided)

III.) Address encoding circuit

(current circuit to be used within the system, exclusively; no external connections provided)

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IV.) Field current circuits

(Connector terminals on the system termination unit for

Channel 1: 11 to 14

Channel 2: 21 to 24

Channel 3: 31 to 34

Channel 4: 41 to 44)

Type of protection "Intrinsic safety" EEx ia IIC/IIB;

Maximum values per channel:

$$V_o = 5.5 \text{ V}$$

$$I_o = 25 \text{ mA}$$

$$P_o = 35 \text{ mW}$$

Characteristic curve: linear

$$C_i = 60 \text{ nF}$$

L_i negligible

Max. permissible external values for:

(the following values comply with the program for the PTB report ThEx-10)

L_o (mH)	IIC	IIB
	C_o (μF)	C_o (μF)
2	2.6	15
1	2.9	17
0.5	3.6	21
0.2	4.5	27

When connecting the field current circuits to active sensors with maximum values for each sensor of:

$$V_o = 1.2 \text{ V}$$

$$I_o = 50 \text{ mA}$$

$$P_o = 60 \text{ mW}$$

C_i negligible

L_i negligible

the maximum permissible external values are valid for connections between a channel and a sensor:

(the following values comply with the program for the PTB report ThEx-10)

L_o (mH)	IIC	IIB
	C_o (μF)	C_o (μF)
2	1.6	9.8
1	1.9	12
0.5	2.3	14
0.2	3.0	19

The intrinsically safe measuring current circuits have a safe electrical isolation from earth, and from each other, from the intrinsically safe signal current circuits (CAN BUS), and from the address encoding circuit up to a peak value of the rated voltage of 30 V. The intrinsically safe signal current circuits (CAN BUS) and the address encoding circuit have a safe electrical isolation from earth and are electrically connected to each other.

(16) Test report PTB Ex 01-20429

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(17) Special conditions for safe use

(None)

(18) Essential health and safety requirements

Covered by standards and regulations stated above.

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