

# 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 2200**

(4) Equipment: ANALOG OUTPUT MODULE Typ AO4I-Ex

(5) Manufacturer: ABB Automation Products

(6) Address: D-63754 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 01-21017.

(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) **S C H E D U L E**

(14) **EC-TYPE-EXAMINATION CERTIFICATE PTB 00 ATEX 2200**

(15) Description of equipment

The Analog Output Module Type AO4I-Ex outputs analog signals from the fieldbus system to the field current circuits in order to control actuators. The Analog Output Module Type AO4I-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 Analog Output Module Typ AO4I-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 +60°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 = 3.5 W (power consumption)

C<sub>i</sub> negligible

L<sub>i</sub> 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 60 V of the rated voltage.

**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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## SCHEDULE TO EC-TYPE-EXAMINATION CERTIFICATE PTB 00 ATEX 2200

### IV.) Field current circuits

(Connector terminals on the system termination unit for  
Channel 1: 11, 12  
Channel 2: 21, 22  
Channel 3: 31, 32  
Channel 4: 41, 42)

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

Max. values per channel:

$$V_o = 18.9 \text{ V}$$

$$I_o = 80 \text{ mA}$$

$$P_o = 510 \text{ mW}$$

Characteristic curve: trapezoidal

$$C_i = 25 \text{ nF}$$

$L_i$  negligible

Max. permissible external values for:

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

$L_o$ (mH)	IIC	IIB
	$C_o$ ( $\mu$ F)	$C_o$ ( $\mu$ F)
2	0.10	1
1	0.10	1
0.5	0.12	1
0.2	0.15	1.17

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

(16) Test report PTB Ex 01-21017

(17) Special conditions for safe use

(None)

(18) Essential health and safety requirements

Covered by the standards and regulations stated above.

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