

# 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 2180**

(4) Equipment: DIGITAL IN/OUT Module Typ DIO8-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 01-20431.

(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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# Physikalisch-Technische Bundesanstalt

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## (13) SCHEDULE

### (14) EC TYPE-EXAMINATION CERTIFICATE PTB 00 ATEX 2180

#### (15) Description of equipment

The Digital I/O Module Type DIO8-Ex is used in conjunction with digital sensors (with Namur proximity switches or contacts, as required) for measuring binary variables or outputting digital variables to control low power valves. The Digital I/O Module Type DIO8-Ex is part of the S900 Remote I/O Fieldbus System in accordance with the separate EC Type Acceptance Certificate, PTB 00 ATEX 2156 U. The Digital I/O Module Type DIO8-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 +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 = 1.5 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 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)

##### IV.) Field current circuits

(Connector terminals on the system termination unit for

Channel 1: 11,12

Channel 2: 13,14

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

Maximum values per channel:

V<sub>o</sub> = 9.6 V

I<sub>o</sub> = 44 mA

P<sub>o</sub> = 106 mW

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# Physikalisch-Technische Bundesanstalt

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## SCHEDULE TO EC-TYPE-EXAMINATION CERTIFICATE PTB 00 ATEX 2180

Channel 3: 21,22  
Channel 4: 23,24  
Channel 5: 31,32  
Channel 6: 33,34  
Channel 7: 41,42  
Channel 8: 43,44)

Characteristic curve: linear  
C<sub>i</sub> negligible  
L<sub>i</sub> negligible

Max. permissible external values for:  
(the following values comply with the program for the  
PTB report ThEx-10)

L <sub>o</sub> (mH)	IIC	IIB
	C <sub>o</sub> (μF)	C <sub>o</sub> (μF)
2	0.9	5.1
1	1.1	6.1
0.5	1.3	7.3
0.2	1.7	8.6

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

(16) Test report PTB Ex 01-20431

(17) Special conditions for safe use

(None)

(18) Essential health and safety requirements

Covered by the standards and regulations stated above.

Zertifizierungsstelle Explosionsschutz  
By order:

Braunschweig,

Dr.-Ing. U. Johannsmeyer  
Regierungsdirektor


## 1. SUPPLEMENT

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

to EC-TYPE-EXAMINATION CERTIFICATE PTB 00 ATEX 2180

(Translation)

Equipment: DIGITAL IN/OUT module, type DIO8-Ex

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

Manufacturer: ABB Automation Products

Address: 63754 Alzenau, Germany

### Description of supplements and modifications

With modified software the digital I/O module, type DIO8-Ex may also be used as pulse counter and for measurement of frequencies. In future the type designation for this application will be:

### **FREQUENCY Input, type FI2-Ex**

All other details and specifications of the EC-type examination certificate are also valid for this type without changes.

Test report: PTB Ex 01-21397

Zertifizierungsstelle Explosionsschutz

Braunschweig, October 15, 2001

By order:

Dr.-Ing. U. Johannsmeyer  
Regierungsdirektor

