



## (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 01 ATEX 2048**



(4) Equipment: **DIGITAL OUTPUT MODULE Typ DO4-Ex**

(5) Manufacturer: **ABB Automation Products**

(6) Address: **D-63754 Alzenau**

(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 01-21132.

(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

## (13) SCHEDULE

### (14) EC-TYPE-EXAMINATION CERTIFICATE PTB 01 ATEX 2048

#### (15) Description of the device

The Digital Output Module Type DO4-Fx is used for outputting digital signals from the fieldbus system in a field current circuit to trigger binary actors. The Digital Output Module Type DO4- 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 Output Module Type DO4-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.

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

#### Electrical specifications

##### I.) AC power supply circuit

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

Maximum values

$V = 20 \text{ V AC (amplitude)}$

$f = 300 \text{ kHz ... 314 kHz}$

$P = 4.8 \text{ W (power consumption)}$

Ci negligible

Li 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

# Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

## SCHEDULE TO EC-TYPE-EXAMINATION CERTIFICATE PTB 01 ATEX 2048

### 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 Maximum values per channel:

$V_o = 27 \text{ V}$

$I_o = 100 \text{ mA}$

$P_o = 675 \text{ mW}$

Characteristic curve: linear

$C_i = 24 \text{ nF}$

Li negligible

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

$L_o \text{ (mH)}$	IIC	IIB
	$C_o \text{ (nF)}$	$C_o \text{ (nF)}$
2	--	286
0.99	30	346
0.5	46	426
0.2	66	576

### Field current circuits

(Connector terminals on the system term. unit for  
Channel 1: 13,14  
Channel 2: 23,24  
Channel 3: 33,34  
Channel 4: 43,44)

Type of protection "Intrinsic safety" EEx ia

IIC/IIB Maximum values per channel:

$V_o = 18.9 \text{ V}$

$I_o = 100 \text{ mA}$

$P_o = 675 \text{ mW}$

Characteristic curve: trapezoidal

$C_i = 24 \text{ nF}$

Li negligible

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

$L_o \text{ (mH)}$	IIC	IIB
	$C_o \text{ (nF)}$	$C_o \text{ (nF)}$
2	--	976
1	86	976
0.5	106	976
0.2	156	1176

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## SCHEDULE TO EC-TYPE-EXAMINATION CERTIFICATE PTB 01 ATEX 2048

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

(16) Test report PTBEx01-21132

(17) Special conditions

(None)

(18) Essential safety and health 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 01 ATEX 2048

(Translation)

Equipment: Digital output module, type DO4-Ex

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

Manufacturer: ABB Automation Products GmbH

Address: Borsigstr. 2, 63755 Alzenau, Germany

### Description of supplements and modifications

Subject matter of this 1<sup>st</sup> supplement is the revision and supplementation of the test documents for organisational reasons. Further modifications have not been made.

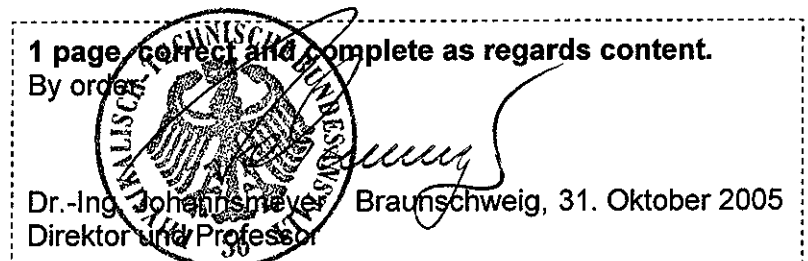
Test report: PTB Ex 03-23140

Zertifizierungsstelle Explosionsschutz  
By order:

Braunschweig, September 4, 2003

(signature)

Dr.-Ing. U. Johannsmeyer  
Regierungsdirektor



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## 2. SUPPLEMENT

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

to EC-TYPE-EXAMINATION CERTIFICATE PTB 01 ATEX 2048

(Translation)

Equipment: Digital Output Module, type DO4-Ex

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

Manufacturer: ABB Automation Products GmbH

Address: Borsigstr. 2, 63755 Alzenau, Germany

### Description of supplements and modifications

In the future, the Digital Output Module, type DO4-Ex may also be manufactured according to the test documents listed in the test report.

The input circuitry of the supply circuit has been modified and the layout of the circuit board has been adapted.

The electrical data and all other specifications are also valid for this 2<sup>nd</sup> supplement.

### Applied standards

EN 50014:1997 + A1 + A2

EN 50020:1994

Test report: PTB Ex 05-25031

Zertifizierungsstelle Explosionsschutz

By order:

  
Dr.-Ing. U. Johannsmeyer  
Regierungsdirektor



Braunschweig, April 18, 2005

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