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 14 ATEX 2003

(4) Equipment: Excom module, type DI401Ex

(5) Manufacturer: Hans Turck GmbH & Co. KG

(6) Address: Witzlebenstraße 7, 45472 Mülheim an der Ruhr, 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 test report PTB Ex 14-23281.

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

EN 60079-0:2012 **EN 60079-11:2012**

(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:

Ex	**II 2(1) G Ex ib [ia Ga] IIC T4 Gb**	**and**	**II (1) D [Ex ia Da] IIIC**
alternatively	**II 2(1) G Ex ib [ia] IIC T4**	**and**	**II (1) D [Ex ia] IIIC**

Zertifizierungssektor Explosionsschutz Braunschweig, May 22, 2014

On behalf of PTB:

Dr.-Ing. T. Horn
Regierungsrat

PHYSIKALISCH-TECHNISCHE BUNDESANSTALT 95

ZSEx10100e.dotm

(13) # SCHEDULE

(14) ## EC-TYPE-EXAMINATION CERTIFICATE PTB 14 ATEX 2003

(15) Description of equipment

The digital input module, type DI401Ex is used for the communication between external sensors in field circuits and field bus systems.

The plug-in module forms part of the *excom* field bus system. It is operated in the module rack with backplane of the *excom* field bus system certified under PTB 00 ATEX 2194 U. A degree of protection of IP20 is guaranteed in connection with the enclosure of the module rack.

The equipment is intended for the application inside the hazardous area.

The intrinsically safe field circuits may be led into hazardous areas of zones 0, 1 or 2 (EPL Ga, Gb or Gc), or 20, 21 or 22 (EPL Da, Db or Dc) respectively.

The permissible ambient temperature range is: -20 °C up to +70 °C.

Electrical Data

I) **AC-supply circuit** (terminal posts J2:15,16) ..... type of protection Intrinsic Safety Ex ib IIC (system internal circuit without external connection facilities)
only for connection to the certified intrinsically safe circuit according to PTB 00 ATEX 2194 U

Maximum values:

U	= 20	V AC (amplitude)
f	= 300 ... 314	kHz
P	≤ 2	W (power input)
P	≤ 1	W (power consumption in the module)
C_i	negligibly low	
L_i	negligibly low	

The intrinsically safe AC-supply circuit is safely electrically isolated from ground and from all other intrinsically safe circuits up to a peak value of the nominal voltage of 100 V.

II) **Signal circuit (CAN-bus)**.....type of protection Intrinsic Safety Ex ib IIC
(terminal posts
CAN-Bus A J2:9,10
CAN-Bus B J2:11,12)
(system internal circuit without external connection facilities)

Maximum values:

U_o = 6 V
I_o = 124 mA
P_o = 270 mW

C_i = 2 µF
L_i negligibly low

III) **Module adressing** .....type of protection Intrinsic Safety Ex ib IIC
(terminal posts J2:1...6)
(system internal circuit without external connection facilities)

Maximum values:

U_o = 6 V
I_o = 202 mA
P_o = 665 mW

IV) **Field circuits**.....type of protection Intrinsic Safety Ex ia IIC bzw. IIIC
(terminals on the system-module rack plug connector J3
channel 1: 1,2
channel 2: 5,6
channel 3: 9,10
channel 4: 13,14)

Maximum values per channel:

U_o = 8.7 V
I_o = 9.3 mA
P_o = 21 mW
R_i = 933 Ω

linear output characteristic

C_i ≤ 2 nF
L_i negligibly low

For relationship between explosion group and external reactances reference is made to the table:

type of protection	Ex ia and Ex ib	
group	IIC	IIB
L_o	2 mH	5 mH
C_o	1.2 µF	5.2 µF

All channels of the field circuits are safely electrically isolated from each other and from all other circuits up to a peak value of the nominal voltage of 100 V. The values tabulated above apply to one channel in each case (no interconnection).

(16) Test report PTB Ex 14-23281

(17) Special conditions for safe use

none

(18) Essential health and safety requirements

met by compliance with the standards mentioned above

Zertifizierungssektor Explosionsschutz
On behalf of PTB:

Dr.-Ing. T. Horn
Regierungsrat

Braunschweig, May 22, 2014