



(1) **EU-TYPE-EXAMINATION CERTIFICATE**
(Translation)

(2) Equipment or Protective Systems Intended for Use in
Potentially Explosive Atmospheres - **Directive 2014/34/EU**

(3) EU-Type Examination Certificate Number:

PTB 00 ATEX 2181

Issue: 1

(4) Product: Excom Module, type TI40EX

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

(6) Address: Witzlebenstraße 7, 45472 Mülheim, Germany

(7) This product and any acceptable variation thereto is 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 17 of the Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products 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 17-26243.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:
EN 60079-0:2012+A11:2013 EN 60079-11:2012

(10) If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Specific Conditions of Use specified in the schedule to this certificate.

(11) This EU-Type Examination Certificate relates only to the design and construction of the specified product in accordance to the Directive 2014/34/EU. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

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



II 2 (1) G Ex ib [ia Ga] IIC T4 Gb or Ex ib [ia Ga] IIC T4

II (1) D [Ex ia Da] IIIC or [Ex ia] IIIC

Konformitätsbewertungsstelle, Sektor Explosionsschutz

Braunschweig, November 30, 2017

On behalf of PTB

Dr.-Ing. F. Lienesch
Direktor und Professor



ZSEx001e c

sheet 1/4

EU-Type Examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt. In case of dispute, the German text shall prevail.

(13)

SCHEDULE

(14) **EU-Type Examination Certificate Number PTB 00 ATEX 2181, Issue: 1**

(15) Description of Product

The Excom module, type TI40EX is used to record measured temperature values from thermocouples or resistance thermometers or other encoders with defined resistance and DC voltage values and output digital intrinsically safe signals in intrinsically safe signals circuits (CAN bus). It is designed in type of protection Intrinsic Safety "i" and it is intended to be used within the I/O Fieldbus system type excom® with the module subrack, type MT according to PTB 00 ATEX 2194 U.

The excom module, type TI40EX ensures the electrical isolation for the various circuits. These isolate the external measuring circuits from the internal data buses and the internal supply voltage.

The operation of the excom module, type TI40EX inside of an enclosure with a degree protection of at least IP54 is ensured by the application within the I/O Fieldbus system type excom® in potentially explosive atmospheres.

The permissible ambient temperature range is: -20 °C up to +60 °C

Electrical data

I.) AC-supply circuit

type of protection Intrinsic Safety Ex ib IIC;
only for connection with the module subrack,
type MT according PTB 00 ATEX 2194 U
 $P = 1 \text{ W}$ (power consumption)

The intrinsically safe AC-supply circuit is safely electrically isolated from ground and up to a peak value of the nominal voltage of 60V from all other intrinsically safe circuits.

II.) Signal circuit (CAN-BUS)

type of protection Intrinsic Safety Ex ib IIC;
only for connection with the module subrack
type MT according PTB 00 ATEX 2194 U

III.) Address encoding

type of protection Intrinsic Safety Ex ib IIC;
only for connection with the module subrack
type MT according PTB 00 ATEX 2194 U

SCHEDULE TO EU-TYPE EXAMINATION CERTIFICATE PTB 00 ATEX 2181, Issue: 1

IV.) Measuring circuits

Connection terminals on the module rack type MT:

Channel 1: 11 - 14

Channel 2: 21 - 24

Channel 3: 31 - 34

Channel 4: 41 - 44

type of protection Intrinsic Safety
[Ex ia Ga] IIC/IIB or [Ex ia Da] IIIC

Maximum values per channel:

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

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

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

Linear characteristic

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

L_i negligibly low

Maximum values for common external reactances (C_i is taken into account):

(the values below correspond to the ISpark program 6.2)

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

When the measuring circuits are connected to active sensors with the following maximum values per sensor:

type of protection Intrinsic Safety Ex ia IIC/IIB or Ex ia IIIC according to separate certificate;

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

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

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

C_i negligibly low

L_i negligibly low

For the interconnection of a channel with an active sensor, the values for the following permissible common external reactances apply (C_i is taken into account):

(the values below correspond to the ISpark program 6.2)

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

SCHEDULE TO EU-TYPE EXAMINATION CERTIFICATE PTB 00 ATEX 2181, Issue: 1

The intrinsically safe channels of the measuring circuits are safely electrically isolated from ground and up to a peak value of the nominal voltage of 30V from each other and from intrinsically safe signal circuits (CAN-bus) and the address encoding. In each channel, the inputs for passive and active sensors are electrically interconnected.

The intrinsically safe signal circuits (CAN-BUS) and the address encoding are electrically isolated from earth and electrically interconnected to each other.

Modifications

The modifications concern the adaptation to the standards. The internal structure has been adapted. The changes concern the use of alternative components in the electronic circuitry.

(16) Test Report PTB Ex17-26243

(17) Specific conditions of use

None.

(18) Essential health and safety requirements

Met by compliance with the aforementioned standards.

According to Article 41 of Directive 2014/34/EU, EC-type examination certificates which have been issued according to Directive 94/9/EC prior to the date of coming into force of Directive 2014/34/EU (April 20, 2016) may be considered as if they were issued already in compliance with Directive 2014/34/EU. By permission of the European Commission supplements to such EC-type examination certificates and new issues of such certificates may continue to hold the original certificate number issued before April 20, 2016.

Konformitätsbewertungsstelle, Sektor Explosionsschutz
On behalf of PTB

Braunschweig, November 30, 2017


Dr.-Ing. F. Lienesch
Direktor und Professor





(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 2181



(4) Equipment: Excom module, type TI40Ex

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

(6) Address: 45472 Mülheim, 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 01-20428 .

(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, 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:

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

Zertifizierungsstelle Explosionsschutz
By order:

Braunschweig, March 20, 2001

(signature)

Dr.-Ing. U. Johannsmeyer
Regierungsdirektor

4 pages, correct and complete as regards content.
By order:

Dr.-Ing. Johannsmeyer
Direktor und Professor

Braunschweig, March 20, 2005



sheet 1/4

(13)

SCHEDULE

(14)

EC-TYPE-EXAMINATION CERTIFICATE PTB 00 ATEX 2181

(15) Description of equipment

The excom module, type TI40Ex is used for data logging in combination with sensors. Thermocouples, resistance thermometers or other sensing components with defined resistance and direct voltage quantities are alternatively connected as sensors. The excom module, type TI40Ex forms part of the fieldbus system *excom* according to the separate examination certificate PTB 00 ATEX 2194 U. The excom module, type TI40Ex can be plugged and operated in the module subrack with backplane of the fieldbus system *excom*. The degree of protection IP20 is safeguarded in combination with the housing of the module subrack.

The maximum permissible range of the ambient temperature is -20 °C up to +70 °C.

Electrical data

I.) AC-supply circuit

type of protection Intrinsic Safety EEx ib IIC / IIB
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 kHz ... 314 kHz

P = 1 W (power consumption)

C_i negligibly low

L_i negligibly low

The intrinsically safe AC-supply circuit is safely electrically isolated from ground and - up to a peak value of the nominal voltage of 60 V - from all other intrinsically safe circuits.

II.) Signal circuit (CAN-BUS)

(exclusively system-internal circuit, no external connection facilities)

III.) Address encoding, internal communication, psu-monitoring

(exclusively system-internal circuits, no external connection facilities)

IV.) Measuring circuits

(terminals at the system
module subrack for:
channel 1: 1 through 4
channel 2: 5 through 8
channel 3: 9 through 12
channel 4: 13 through 16)

type of protection Intrinsic Safety EEx ia IIC/IIB;

Maximum values per channel:

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

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

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

characteristic: linear

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

L_i negligibly low

Maximum permissible external values for:
(the values below correspond to the calculation
program acc. to PTB-report ThEx-10)

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

When the measuring circuits are connected to active
sensors with the following maximum values per
sensor:

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

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

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

C_i negligibly low

L_i negligibly low

the tabulated maximum permissible values apply for
the interconnection of one channel and one sensor:
(the values below correspond to the calculation
program acc. to PTB-report ThEx-10)

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

The intrinsically safe measuring circuits are safely electrically isolated from ground and - up to a peak value of the nominal voltage of 30 V - from each other and from the intrinsically safe signal circuit (CAN-BUS) and the address encoding circuit. The signal circuit (CAN-BUS) and the address encoding circuit are electrically interconnected and safely electrically isolated from ground.

(16) Test report PTB Ex 01-20428

(17) Special conditions for safe use
(none)

(18) Essential health and safety requirements
met by compliance with the standards mentioned above

Zertifizierungsstelle Explosionsschutz
By order:

Braunschweig, March 20, 2001

(signature)

Dr.-Ing. U. Johannsmeyer
Regierungsdirektor


1. SUPPLEMENT

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

to EC-TYPE-EXAMINATION CERTIFICATE PTB 00 ATEX 2181

(Translation)

Equipment: Excom Module, type TI40Ex

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

Manufacturer: Hans Turck GmbH & Co. KG

Address: Witzlebenstr. 7, 45472 Mülheim an der Ruhr, Germany

Description of supplements and modifications

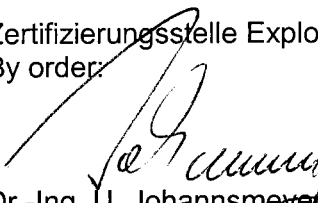
Scope of this 1st supplement is the revision and completion of the test documents for organizational reasons.

The electrical data and all other specifications are also valid for this 1st supplement.

Test report: PTB Ex 04-23352

Zertifizierungsstelle Explosionsschutz

By order:


Dr.-Ing. U. Johannsmeyer
Regierungsdirektor



Braunschweig, July 29, 2004


2. SUPPLEMENT

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

to EC-TYPE-EXAMINATION CERTIFICATE PTB 00 ATEX 2181

(Translation)

Equipment: Excom Module, type TI40Ex

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

Manufacturer: Hans Turck GmbH & Co. KG

Address: Witzlebenstr. 7
45472 Mülheim an der Ruhr, Germany

Description of supplements and modifications

The Excom Module, type TI40Ex may in future also be manufactured according to the test documents listed in the test report.

The modifications concern the internal and external construction as well as the type designation and the marking for organizational reasons.

In future the apparatus will also be labelled with the following type designation:

8/TI40Ex

In future the apparatus will be labelled with the following marking:

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

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

Test report: PTB Ex 04-23392

Zertifizierungsstelle Explosionsschutz

By order:


Dr.-Ing. U. Johannsmeyer
Regierungsdirektor



Braunschweig, July 29, 2004

Sheet 1/1

3. SUPPLEMENT

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

to EC-TYPE-EXAMINATION CERTIFICATE PTB 00 ATEX 2181

(Translation)

Equipment: Excom module, type TI40Ex

Marking:  II 2 (1) G Ex ib [ia Ga] IIC T4 Gb and II (1) D [Ex ia IIIC Da] or
II 2 (1) G Ex ib [ia] IIC T4 and II (1) D [Ex ia IIIC]

Manufacturer: Hans Turck GmbH & Co. KG

Address: Witzlebenstraße 7, 45472 Mülheim an der Ruhr, Germany

Description of supplements and modifications

In the future the Excom module, type TI40Ex may also be manufactured according to the test documents listed in the test report.

The modifications concern the internal and external construction.

The permissible maximum values are presented in summary.

The permissible range of the ambient temperature is: -20 °C up to +60 °C.

Electrical data

I.) AC-supply circuit

type of protection Intrinsic Safety Ex ib IIC / IIB
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 kHz ... 314 kHz

P = 1 W (power consumption)

C_i negligibly low

L_i negligibly low

The intrinsically safe AC-supply circuit is safely electrically isolated from ground and - up to a peak value of the nominal voltage of 60 V - from all other intrinsically safe circuits.

II.) Signal circuit (CAN-BUS)

(system-internal circuit, no external connection facilities)

Sheet 1/3

3. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 00 ATEX 2181

III.) Adress encoding

(system-internal circuit, no external connection facilities)

IV.) Measuring circuits

(terminals at the system
module subrack for:
channel 1: 11 through 14
channel 2: 21 through 24
channel 3: 31 through 34
channel 4: 41 through 44)

type of protection Intrinsic Safety Ex ia IIC/IIB;

Maximum values per channel:

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

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

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

characteristic: linear

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

L_i negligibly low

Maximum permissible external values for:

(the values below correspond to the calculation
program acc. to 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 the measuring circuits are connected to active
sensors with the following maximum values per
sensor:

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

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

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

C_i negligibly low

L_i negligibly low

the tabulated maximum permissible values apply for
the interconnection of one channel and one sensor:

(the values below correspond to the calculation
program acc. to 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

Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

3. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 00 ATEX 2181

The intrinsically safe measuring circuits are safely electrically isolated from ground and - up to a peak value of the nominal voltage of 30 V - from each other and from the intrinsically safe signal circuits (CAN-BUS) and the address encoding circuit.

The intrinsically safe signal circuits (CAN-BUS) and the address encoding circuit are electrically interconnected and safely electrically isolated from ground.

Applied standards

EN 60079-0:2009

EN 60079-11:2007

EN 61241-11:2006

Test report: PTB Ex 11-21022

Zertifizierungssektor Explosionsschutz
On behalf of PTB:

Braunschweig, December 16, 2011

Dr.-Ing. U. Johannsmeyer
Direktor und Professor

