



(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 2179

Issue: 1

(4) Product: Excom module, type AO401Ex

(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 18-26242.

(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
On behalf of PTB:

Braunschweig, May 28, 2018


Dr.-Ing. F. Lienesch
Direktor und Professor



ZSEx001e c

(13)

SCHEDULE

(14) **EU-Type Examination Certificate Number PTB 00 ATEX 2179, Issue: 1**

(15) Description of Product

The Excom module type AO401Ex is an analog output module that generates analog current signals from ia-field circuits from binary signals of fieldbus systems.

The excom module, type AO401EX ensure the electrical isolation for the various circuits. These isolate the external field circuits from the internal data buses and the internal supply voltage.

The operation of the excom module, type AO401EX 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 +70 °C

Electrical data

I.) **AC-supply circuit**

type of protection Intrinsic Safety Ex ib IIC;
only for connection to the module subrack,
type MT according PTB 00 ATEX 2194 U
P = 2.5 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 to 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 to the module subrack type
MT according PTB 00 ATEX 2194 U

sheet 2/4

SCHEDULE TO EU-TYPE EXAMINATION CERTIFICATE PTB 00 ATEX 2179, Issue: 1

IV.) Field circuits

Terminals at the module subrack type MT:

- Channel 1: 11+ , 12-
- Channel 2: 21+ , 22-
- Channel 3: 31+ , 32-
- Channel 4: 41+ , 42-

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

maximum values per channel:

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

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

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

C_i negligibly low

L_i negligibly low

maximum values for commonly existing external reactances:

(the values below were calculated using the ISpark program type 6.2)

L_o (mH)	IIC	IIB
	C_o (μ F)	C_o (μ F)
2	---	1
1	---	1
0.5	0.13	1
0.2	0.17	1.2
0.1	0.21	1.3

The intrinsically safe field circuits are safely electrically isolated from ground and from each other and - up to a peak value of the nominal voltage of 60V - from all other intrinsically safe circuits. The intrinsically safe field circuits are electrically interconnected.

Only passive intrinsically safe circuits may be connected to the field circuits.

Modifications

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

(16) Test Report PTB Ex 18-26242

(17) Specific conditions of use

none

SCHEDULE TO EU-TYPE EXAMINATION CERTIFICATE PTB 00 ATEX 2179, Issue: 1


(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, May 28, 2018


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 2179

(4) Equipment: Excom module, type AO40Ex

(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 01-20430 .

(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

Braunschweig, March 20, 2001

By order:

(signature)

Dr.-Ing. U. Johannsmeyer
Regierungsdirektor

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

Dr.-Ing. Johannsmeyer
Direktor und Professor

Braunschweig, 20.03.2001



sheet 1/3

(13) **SCHEDULE**

(14) **EC-TYPE-EXAMINATION CERTIFICATE PTB 00 ATEX 2179**

(15) Description of equipment

The excom module, type AO40Ex is used for the input and output of analog signals from a fieldbus system to field circuits. The excom module, type AO40Ex forms part of the fieldbus system *excom* according to the separate examination certificate PTB 00 ATEX 2194 U. The excom module, type AO40Ex can be plugged and operated in the module subrack with backplane of the remote I/O-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 +60 °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 = 3.5 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.) Adress encoding, internal communication, psu-monitoring

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

IV.) Field circuits

(terminals at the system
module subrack for
channel 1: 1, 2
channel 2: 5, 6
channel 3: 9, 10
channel 4: 13, 14)

type of protection Intrinsic Safety EEx ia IIC/IIB;

Maximum values per channel:

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

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

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

characteristic: trapezoidal

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

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	0.10	1
1	0.10	1
0.5	0.12	1
0.2	0.15	1.17

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

(16) Test report PTB Ex 01-20430

(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:

(signature)

Dr.-Ing. U. Johannsmeyer

Regierungsdirektor

Braunschweig, March 20, 2001


1. SUPPLEMENT

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

to EC-TYPE-EXAMINATION CERTIFICATE PTB 00 ATEX 2179

(Translation)

Equipment: Excom Module, type AO40EX

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 AO40Ex 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 according to the respective variant:

8/AO40Ex

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

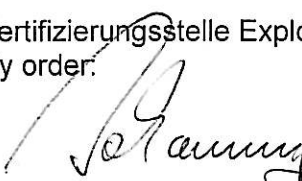
 II 2 (1 G/D) G EEx ib [ia] IIC T4

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

Test report: PTB Ex 04-23351

Zertifizierungsstelle Explosionsschutz

By order:


Dr.-Ing. U. Johannsmeyer
Regierungsdirektor



Braunschweig, August 05, 2004

Sheet 1/1

2. SUPPLEMENT

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

to EC-TYPE-EXAMINATION CERTIFICATE PTB 00 ATEX 2179

(Translation)

Equipment: Excom Module, type AO40EX

Marking:  II 2 (1 G/D) 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

In the future the Excom Module, type AO40Ex may also be manufactured according to the test documents listed in the test report.

The modifications concern the primary fuse of the supply circuit and the secondary fuse of the CAN-circuit.

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

Applied standards

EN 50014:1997 + A1 + A2

EN 50020:1994

Test report: PTB Ex 05-25066

Zertifizierungsstelle Explosionsschutz
By order:


Dr.-Ing. U. Johannsmeyer
Regierungsdirektor



Braunschweig, May 10, 2005

3. SUPPLEMENT

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

to EC-TYPE-EXAMINATION CERTIFICATE PTB 00 ATEX 2179

(Translation)

Equipment: Excom module, type AO40Ex and AO401..

Marking:  II 2(1) G Ex ib [ia] IIC T4 and II (1) D [Ex iaD]

Manufacturer: Hans Turck GmbH & Co. KG

Address: Witzlebenstraße 7
45472 Mülheim an der Ruhr, Germany

Description of supplements and modifications

The Excom module of type AO40Ex is supplemented by the type AO401.. . In future it may be manufactured according to the documents listed in the assessment and test report.

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

The permissible range of the ambient temperature is -20 °C ... 70 °C.

The electrical data, the notes for manufacture and operation and all other specifications of the EC-type examination certificate apply without changes and are presented in summary.

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 = 3.5 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.

Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

3. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 00 ATEX 2179

- II.) **Signal circuit (CAN-BUS)** system-internal circuit, without external connection facilities)
- III.) **Adress encoding** system-internal circuit, without external connection facilities)
- IV.) **Field circuits** type of protection Intrinsic Safety Ex ia IIC or Ex iaD
 external terminals at the system module-subrack
 (channel 1: 1, 2
 channel 2: 5, 6
 channel 3: 9, 10
 channel 4: 13, 14)

For electrical data of the individual types of modules, reference is made to the table.

Maximum values per channel	AO40Ex..	AO401..
U_o	18.9 V	18.9 V
I_o	80 mA	80 mA
P_o	510 mW	510 mW
R_i		334 Ω
C_i	25 nF	negligibly low
L_i	negligibly low	negligibly low
Characteristic	approximately trapezoidal	approximately trapezoidal

For relationship between the types of modules, the external reactances and the explosion group, reference is made to the table.

Explosion group	IIC	IIB	IIC	IIB
L_o [mH]	C_o [nF]	C_o [μ F]	C_o [nF]	C_o [μ F]
2	100	1	120	1
1	100	1	120	1
0.5	120	1	140	1
0.2	150	1.17	180	1.2

All functional blocks of the module are safely electrically isolated from ground and - up to a peak value of the nominal voltage of 60 V - from all other intrinsically safe circuits.

Applied standards

EN 60079-0:2006
 EN 61241-0:2006

EN 60079-11:2007
 EN 61241-11:2006

Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

3. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 00 ATEX 2179

Assessment and test report: PTB Ex 11-20235

Zertifizierungssektor Explosionsschutz
On behalf of PTB:

Braunschweig, January 20, 2011



Dr.-Ing. U. Johannsmeyer
Direktor und Professor

EU-Konformitätserklärung Nr. 5003-2M

EU Declaration of Conformity No.:

TURCK

Wir/We

HANS TURCK GMBH & CO KG
Witzlebenstr. 7, 45472 Mülheim an der Ruhr, Germany



erklären in alleiniger Verantwortung, dass die Produkte
declare under our sole responsibility that the products

Analoge Ausgangsmodule / analog output modules

für das / for the: **Remote – I/O – System excom®**

Typ / type: **AO401Ex** Identnr.: **6884205**

Ex-Kennzeichnung / Ex-marking:

Gas / gas  II 2 (1) G Ex ib [ja Ga] IIC T4 Gb
Staub / dust  II (1) D [Ex ia Da] IIIC

auf die sich die Erklärung bezieht, den Anforderungen der folgenden EU-Richtlinien durch Einhaltung der
folgenden harmonisierten Normen genügen:
to which this declaration relates are in conformity with the requirements of the following EU-directives by compliance with the following
harmonised standards:

EMV – Richtlinie / EMC Directive 2014 / 30 / EU 26. Feb. 2014
EN 61326-1:2013

Richtlinie / Directive ATEX 2014 / 34 / EU 26. Feb. 2014
EN 60079-0:2012 + A11:2013 EN 60079-11:2012

Richtlinie / Directive RoHS 2011 / 65 / EU 8. Jun. 2011

Weitere Normen, Bemerkungen
additional standards, remarks

Zusätzliche Informationen:

Supplementary information: Identnr.:

Angewandtes ATEX-Konformitätsbewertungsverfahren / ATEX - conformity assessment procedure applied:

Modul B + Modul E (enthalten in Modul D) / module B + module E (part of module D)

EU-Baumusterprüfbescheinigung (Modul B) PTB 00 ATEX 2179 / EU-type examination certificate (module B):

ausgestellt von / issued by: Physikalisch Technische Bundesanstalt, Kenn-Nr. / number 0102,
Bundesallee 100, 38116 Braunschweig, Germany

Zertifizierung des QS-Systems gemäß Modul D durch:

certification of the QS-system in accordance with module D by:

Physikalisch Technische Bundesanstalt, Kenn-Nr. / number 0102,
Bundesallee 100, 38116 Braunschweig, Germany

Mülheim, den 13.07.2018



i.V. U. Vix, CE-Koordinatorin / CE Coordinator

Ort und Datum der Ausstellung /
Place and date of issue

Name, Funktion und Unterschrift des Befugten /
Name, function and signature of authorized person