



(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 2178**

**Issue: 1**

(4) Product: Excom module, type DM80EX and DF20EX

(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 17-26197.

(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, February 17, 2017

On behalf of PTB:

  
Dr.-Ing. F. Lienesch  
Regierungsdirektor



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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 2178, Issue: 1**

(15) Description of Product

The excom module, type DM80EX and DF20EX serves to input and output digital intrinsically safe signals from the field bus system into intrinsically safe field circuits. It is designed in type of protection Intrinsic Safety "i" and 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 DM80EX and DF20EX, ensure the electrical isolation for 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 DM80EX and DF20EX inside of an enclosure with a degree of 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 with the module subrack  
type MT according PTB 00 ATEX 2194 U  
P = 1 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

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**SCHEDULE TO EU-TYPE EXAMINATION CERTIFICATE PTB 00 ATEX 2178, Issue: 1**

**IV.) Field circuits**

Terminals at the module subrack type MT:

- Channel 1: 11+ , 12-
- Channel 2: 13+ , 14-
- Channel 3: 21+ , 22-
- Channel 4: 23+ , 24-
- Channel 5: 31+ , 32-
- Channel 6: 33+ , 34-
- Channel 7: 41+ , 42-
- Channel 8: 43+ , 44-

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

maximum values per channel:

$$U_o = 9.6 \text{ V}$$

$$I_o = 44 \text{ mA}$$

$$P_o = 106 \text{ mW}$$

characteristic: linear

$C_i$  negligibly low

$L_i$  negligibly low

maximum values for common external reactances:

(the values below correspond to the ISpark program)

$L_o$ (mH)	IIC	IIB
	$C_o$ ( $\mu$ F)	$C_o$ ( $\mu$ F)
2	0.9	5.1
1	1.1	6.1
0.5	1.3	7.3
0.2	1.7	9.6
0.1	2	12

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

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 Ex 17-26197

(17) Specific conditions of use

None

**SCHEDULE TO EU-TYPE EXAMINATION CERTIFICATE PTB 00 ATEX 2178, 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, February 17., 2017

  
Dr.-Ing. F. Lienesch  
Regierungsdirektor





## (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 2178**

(4) Equipment: Excom module, type DM80Ex

(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 01-20391 .

(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 21, 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, June 30, 2005



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(13)

## SCHEDULE

(14)

### EC-TYPE-EXAMINATION CERTIFICATE PTB 00 ATEX 2178

(15) Description of equipment

The excom module, type DM80Ex is used for the input and output of digital signals from a fieldbus system to field circuits. The excom module, type DM80Ex forms part of the fieldbus system *excom* according to the separate examination certificate PTB 00 ATEX 2194 U. The excom module, type DM80Ex 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 = 1.5 W (power consumption)

C<sub>i</sub> negligibly low

L<sub>i</sub> 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.)  
 EEx ia IIC/IIB;  
 (terminals at the system  
 module subrack for  
 channel 1: 1, 2  
 channel 2: 3, 4  
 channel 3: 5, 6  
 channel 4: 7, 8  
 channel 5: 9, 10  
 channel 6: 11, 12

channel 7: 13, 14  
 channel 8: 15, 16)

Field circuits type of protection Intrinsic Safety

Maximum values per channel:

$U_o = 9.6 \text{ V}$   
 $I_o = 44 \text{ mA}$   
 $P_o = 106 \text{ mW}$   
 characteristic: linear  
 $C_i$  negligibly low  
 $L_i$  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
	$C_o$ ( $\mu\text{F}$ )	$C_o$ ( $\mu\text{F}$ )
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 circuits are safely electrically isolated from ground and - up to a peak value of the nominal voltage of 30 V - from the intrinsically safe signal circuit (CAN-BUS). The intrinsically safe field circuits and the address encoding circuit are interconnected.

(16) Test report PTB Ex 01-20391

(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 21, 2001


## 1. SUPPLEMENT

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

to EC-TYPE-EXAMINATION CERTIFICATE PTB 00 ATEX 2178

(Translation)

Equipment: Excom Module, type DM80Ex

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

Manufacturer: Hans Turck GmbH & Co. KG

Address: 45472 Mülheim, Germany

### Description of supplements and modifications

Due to a modification of the software the excom module, type DM80Ex can also be used as a puls counter and for the measurement of frequencies. In the future the type designation for this variant will be:

**Excom module, type DF20Ex**

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

Test report: PTB Ex 01-21398

Zertifizierungsstelle Explosionsschutz

By order:

Braunschweig, August 2, 2004

(signature)

Dr.-Ing. U. Johannsmeyer  
Regierungsdirektor

1 page, correct and complete as regards content

By order:

  
Dr.-Ing. Johannsmeyer  
Direktor und Professor

Braunschweig, June 30, 2005






## 2. SUPPLEMENT

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

to EC-TYPE-EXAMINATION CERTIFICATE PTB 00 ATEX 2178

(Translation)

Equipment: Excom Module, type DM80Ex, DF20Ex

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 DM80Ex, DF20Ex 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/DM80Ex**  
**8/DF20Ex**

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

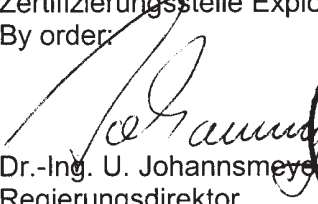
 II 2 (1 G/D) G EEx ib [ia] IIC T4

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

Test report: PTB Ex 04-23350

Zertifizierungsstelle Explosionsschutz

By order:

  
Dr.-Ing. U. Johannsmeyer  
Regierungsdirektor



Braunschweig, August 02, 2004

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## 3. SUPPLEMENT

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

to EC-TYPE-EXAMINATION CERTIFICATE PTB 00 ATEX 2178

(Translation)

Equipment: Excom module, type DM80Ex, DF20Ex

Marking:  I 2 (1) G Ex ib [ia] IIC T4 or 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

In the future the Excom module, type DM80Ex, DF20Ex may also be manufactured according to the test documents listed in the assessment and test report.

The modifications concern the internal and external construction.

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

The marking has been adapted to the state of the standards.

All other specifications of the EC-type examination certificate and its supplements apply without changes.

### Electrical data

#### I.) AC-supply circuit

System-internal circuit in type of protection Intrinsic Safety Ex ib IIC/IIB or Ex iaD 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 = 1 W (input power)

C<sub>i</sub> negligibly low

L<sub>i</sub> 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.

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EC-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.

# Physikalisch-Technische Bundesanstalt

Braunschweig und Berlin

## 3. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 00 ATEX 2178

- II) **Signal circuit (CAN-Bus)** system-internal circuit, without external connection facilities
- III) **Address encoding circuit** system-internal circuit, without external connection facilities
- IV.) **Field circuits** type of protection Intrinsic Safety Ex ia IIC/IIB or Ex iaD  
 (terminals at the system module subrack for: Maximum values per channel:  
 channel 1: 1, 2  $U_o = 9.6 \text{ V}$   
 channel 2: 3, 4  $I_o = 44 \text{ mA}$   
 channel 3: 5, 6  $P_o = 106 \text{ mW}$   
 channel 4: 7, 8 characteristic: linear  
 channel 5: 9, 10  $C_i$  negligibly low  
 channel 6: 11, 12  $L_i$  negligibly low  
 channel 7: 13, 14  
 channel 8: 15, 16)

The permissible values of the external reactances corresponding to the calculation program to PTB-report ThEx-10 shall be taken from the table

$L_o$ (mH)	IIC	IIB
	$C_o$ ( $\mu\text{F}$ )	$C_o$ ( $\mu\text{F}$ )
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 circuits are safely electrically isolated from ground and - up to a peak value of the nominal voltage of 30 V - from the intrinsically safe signal circuit (CAN-BUS). The intrinsically safe field circuits and the address encoding circuit are inter-connected.

### Applied standards

EN 60079-0:2006

EN 60079-11:2007

EN 61241-0:2006

EN 61241-11:2006

Assessment and test report: PTB Ex 10-29368

Zertifizierungssektor Explosionsschutz  
 On behalf of PTB:

Braunschweig, August 4, 2010

Dr.-Ing. U. Johannsmeyer  
 Direktor und Professor



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EC-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.

## 4. SUPPLEMENT

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

to EC-TYPE-EXAMINATION CERTIFICATE PTB 00 ATEX 2178

(Translation)

Equipment: Excom module, type DM80Ex, DF20Ex

Marking:  II 2 (1) G Ex ib [ia Ga] IIC T4 Gb and II (1) D [Ex ia IIIC Da]  
alternatively  
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 DM80Ex, DF20Ex may also be manufactured according to the test documents listed in the test report. The modifications concern the implementation of changes which are not relevant for safety and an update of the state of the standards for organisational reasons.

The application conditions, the permissible ambient temperature range, the electrical data and all other specifications of the EC-type examination certificate and its previous supplements apply without changes.

### Applied standards

EN 60079-0:2009

EN 60079-11:2012

Test report: PTB Ex 12-22030

Zertifizierungssektor Explosionschutz  
On behalf of PTB:

Braunschweig, August 7, 2012

  
Dr.-Ing. U. Johannsmeyer  
Direktor und Professor



Sheet 1/1

EC-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.

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

**Remote – I/O – System excom® Module / modules**

Type:

**DM80EX und / and DF20EX**

Ex-Kennzeichnung / Ex-marking:

Gas / gas	⊕ II 2 (1) G	Ex ib [ia Ga] IIC T4
Staub / dust	⊕ II (1) D	[Ex ia] 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	EN 60079-11:2012	
+A11:2013		

Weitere Normen, Bemerkungen  
additional standards, remarks

–

Zusätzliche Informationen:  
Supplementary information:

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 2178 / 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 08.05.2017

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