



# IECEx Certificate of Conformity

## INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit [www.iecex.com](http://www.iecex.com)

Certificate No.: **IECEx PTB 11.0005X**

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Certificate history:

Status: **Current**

Issue No: 8

Issue 7 (2017-05-03)

Issue 6 (2016-03-24)

Issue 5 (2014-05-06)

Issue 4 (2013-08-28)

Issue 3 (2013-06-07)

Issue 2 (2012-09-17)

Issue 1 (2011-12-06)

Issue 0 (2011-01-17)

Date of Issue: 2020-01-23

Applicant: **Dräger Safety AG & Co. KGaA**  
Revalstrasse 1  
23560 Luebeck  
Germany

Equipment: **Gas detection transmitters, Series ETR/ITR/XTR 0\*\*\*, Remote Box RCU 0\*\*\*, EAC 01\*\***

Optional accessory:

Type of Protection: **db, eb, ia, tb**

Marking: Ex db IIC T6/T4 Gb resp.  
Ex db eb IIC T6/T4 Gb resp.  
Ex tb IIIC T80°C/T130°C Db resp.  
Ex db ia IIC T6/T4 Gb resp.  
Ex db eb ia IIC T6/T4 Gb resp.  
Ex db [ia] IIC T6/T4 Gb resp.  
Ex db ia [ia] IIC T6/T4 Gb resp.  
Ex db eb [ia] T6/T4 Gb resp.  
Ex db eb ia [ia] IIC T6/T4 Gb resp.

Approved for issue on behalf of the IECEx  
Certification Body:

**Dr. Ing. Detlev Markus**

Position:

**Head of Department "Explosion Protection in Energy  
Technology"**

Signature:  
(for printed version)

Date:

04.03.2020

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Certificate issued by:

**Physikalisch-Technische Bundesanstalt (PTB)**  
Bundesallee 100  
38116 Braunschweig  
Germany





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Ex tb [ia] IIIC T135°C Db



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Manufacturer: **Dräger Safety AG & Co. KGaA**  
Revalstrasse 1  
23560 Luebeck  
Germany

Additional  
manufacturing  
locations:

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended

## STANDARDS :

The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards

IEC 60079-0:2017 Explosive atmospheres - Part 0: Equipment - General requirements  
Edition:7.0

IEC 60079-1:2014-06 Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"  
Edition:7.0

IEC 60079-11:2011 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"  
Edition:6.0

IEC 60079-31:2013 Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"  
Edition:2

IEC 60079-7:2017 Explosive atmospheres - Part 7: Equipment protection by increased safety "e"  
Edition:5.1

This Certificate **does not** indicate compliance with safety and performance requirements other than those expressly included in the Standards listed above.

## TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in:

Test Reports:

DE/PTB/ExTR11.0010/00  
DE/PTB/ExTR11.0010/03  
DE/PTB/ExTR11.0010/06

DE/PTB/ExTR11.0010/01  
DE/PTB/ExTR11.0010/04

DE/PTB/ExTR11.0010/02  
DE/PTB/ExTR11.0010/05

Quality Assessment Report:

DE/BVS/QAR06.0001/14



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**EQUIPMENT:**

Equipment and systems covered by this Certificate are as follows:

Gas detection transmitters, Series ETR/ITR/XTR 0\*\*\*, Remote Box RCU 0\*\*\*, EAC 01\*\*

**SPECIFIC CONDITIONS OF USE: YES as shown below:**

Repair of flameproof joints on the basis of the values in table 1 and 2 of IEC 60079-1 is not accepted. Repairs on flameproof joints may only be performed in accordance with the manufacturer's design specifications.

The device variants incorporating a FISCO fieldbus interface as well as the Gas detection transmitter Type ETR 0\*\*\* must operate in circuits that are limited to overvoltage category I/II/III in accordance with IEC 60664-1 for FISCO field device operation.



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## Equipment (continued):

The Gas detection transmitters ETR/ITR/XTR 0\*\*\* consist of three different types of sensor and interfaces. The Gas detection transmitter type ETR 0\*\*\* uses the electrochemical sensing principle, the Gas detection transmitter type ITR 0\*\*\* uses the infrared sensing principle and the Gas detection transmitter type XTR 0\*\*\* uses the catalytic sensing principle or infrared sensing principle with a catalytic sensor interface. The Remote Box type RCU 0\*\*\* shall only be used with separate certified sensors. The sensor frontend (EC sensing head) of the ETR 0\*\*\* series comprises a galvanically separating barrier circuit (inside the flameproof enclosure) and intrinsically safe electronics located outside the flameproof enclosure as well as an electro-chemical resp. ultrasonic sensor - all of them being covered by this certificate. The sensors of the ITR 0\*\*\* and XTR 0\*\*\* series are covered by separate certifications, which are accepted under this certificate.

The internal electronics optionally covers the intrinsically safe fieldbus under consideration of the maximum FISCO input ratings applicable for the operation as both FISCO Field device or alternatively non- intrinsically safe fieldbus Modbus RTU.

The connection of the equipment is made on the one hand via direct cable entries into the flameproof enclosure (E,I,X)TR 0(2...5)\*(0...F) or on the other hand via a terminal box of the increased safety type of protection (E,I,X)TR 0(2...5)\*(I...X). For remote applications, the equipment can optionally be connected to the flameproof terminal box EAC 01\*\*.

For further details, please refer to the attachment!



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## **DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)**

Update to newest standard versions.

The modifications include the internal assembly of the electronic used for the connection of external sensors.

Alternate connection of the ultrasonic sensor type LD05.21-\*\*\* to the galvanic insulator in the sensor enclosure.

## **Annex:**

[Attachment to IECEx PTB 11.0005 X Issue 08.pdf](#)



Applicant: Draeger Safety AG & Co. KGaA  
Revalstrasse 1  
23560 Luebeck  
Germany

Electrical Apparatus: Gas detection transmitters, Series ETR/ITR/XTR 0\*\*\*,  
Remote Box RCU 0\*\*\*, EAC 01\*\*

#### Description of equipment:

The Gas detection transmitters ETR/ITR/XTR 0\*\*\* consist of three different types of sensor and interfaces. The Gas detection transmitter type ETR 0\*\*\* uses the electrochemical sensing principle, the Gas detection transmitter type ITR 0\*\*\* uses the infrared sensing principle and the Gas detection transmitter type XTR 0\*\*\* uses the catalytic sensing principle or infrared sensing principle with a catalytic sensor interface. The Remote Box type RCU 0\*\*\* shall only be used with separate certified sensors. The sensor frontend (EC sensing head) of the ETR 0\*\*\* series comprises a galvanically separating barrier circuit (inside the flameproof enclosure) and intrinsically safe electronics located outside the flameproof enclosure as well as an electro-chemical resp. ultrasonic sensor - all of them being covered by this certificate. The sensors of the ITR 0\*\*\* and XTR 0\*\*\* series are covered by separate certifications, which are accepted under this certificate.

The internal electronics optionally covers the intrinsically safe fieldbus under consideration of the maximum FISCO input ratings applicable for the operation as both FISCO Field device or alternatively non- intrinsically safe fieldbus Modbus RTU.

The connection of the equipment is made on the one hand via direct cable entries into the flameproof enclosure (E,I,X)TR 0(2...5)\*(0...F) or on the other hand via a terminal box of the increased safety type of protection (E,I,X)TR 0(2...5)\*(I...X). For remote applications, the equipment can optionally be connected to the flameproof terminal box EAC 01\*\*.

#### History of changes:

##### **Description of changes of Issue 2:**

Addition of the Gas detection transmitters types ETR 04\*\* and ETR 05\*\* using intrinsically safe sensing head, whose electronics is located in a plastic housing outside the flameproof enclosure and which is supplied by a galvanically isolating barrier circuit.

##### **Description of changes of Issue 3:**

Correction of the marking.

##### **Description of changes of Issue 4:**

Minor formal changes in the IECEx CoC Attachment of Issue 3. No technical or Ex-relevant changes.

##### **Description of changes of Issue 5:**

Addition of the Gas detection transmitters types ETR 02\*\* and ETR 03\*\* using electrochemical sensors, whose electronics is located in a housing of the type of protection flameproof



enclosure and which provides intrinsic safe circuits to supply the field sensors.

The flameproof enclosure of the series \*TR 0\*\*\* no longer requires an O-Ring gasket between bottom part and cover. The specified torque value is reduced from originally 30 Nm to 5 Nm. This applies to the aluminium and stainless steel variant.

The minimum depth of the blind plugs (see Drawing No. SE20882) of the enclosure series \*TR 0\*\*\* changes from 15.1 mm to 13.9 mm initially.

The Nomenclature varies in removing the DrägerSensor XS variant under item "3:Sensor". The nomenclature and rated data in the 3. ATEX Supplement covers all changes of the supplements 1 to 3.

The Gas detection transmitters of type ETR/ITR/XTR 0\*\*\* meet the requirements of the standards IEC 60079-0 Ed.6. The requirements of IEC 60079-1 Ed.6, IEC 60079-7 Ed.4, IEC 60079-11 Ed.6 and IEC 60079-31 Ed.1 remain unchanged.

#### **Description of changes of Issue 6:**

Update to newest edition of standard IEC 60097-0 Ed. 6, IEC 60079-1 Ed. 7 and IEC 60079-31 Ed. 2.

Additional internal electronic PCB providing intrinsically safe Fieldbus interface with model code extension for the "4:Interface" with digit A, B, E, F, S, T, W and X.

Additional internal electronic PCB providing non-intrinsically safe Fieldbus interface with model code extension for the "4: Interface" with digit 2 and K.

Ex marking update in accordance with IEC 60079-1 Ed. 7.

#### **Nomenclature:**

\*TR 0 \* \* \*

1 2 3 4

##### **1: Sensing principle**

|   |   |                 |
|---|---|-----------------|
| E | = | electrochemical |
| I | = | infrared        |
| X | = | catalytic       |

##### **2: Series and enclosure material**

|   |   |                                         |
|---|---|-----------------------------------------|
| 2 | = | 02/03 aluminium enclosure               |
| 3 | = | 02/03 series, stainless steel enclosure |
| 4 | = | 04/05 series, aluminium enclosure       |
| 5 | = | 04/05 series, stainless steel enclosure |

##### **3: Sensor**

ITR 0 \* \* \*

##### **3: Sensor**

0 = IDS 0001



- 1 = IDS 0101
- 2 = IDS 0102
- 5 = IDS 0105

**ETR 0 \_ \_ \***

3: Sensor

- 0 = DrägerSensor or XS with Adapter
- 2 = Ultrasonic sensor

**XTR 0 \_ \_ \***

3: Sensor

- 0 = IDS 0002
- 1 = XDS 020\*
- 2 = Ex-Sensor LC NPT

4: Interface

- 0 = "d", 4-20 mA
- 1 = "d", 4-20 mA mit Relais/ with Relay
- 2 = "d", Modbus RTU
- A = "d"+"ia", Foundation Fieldbus
- B = "d"+"ia", Foundation Fieldbus SIF
- E = "d"+"ia", Profibus
- F = "d"+"ia", Profisafe
- I = "d"+"e", 4-20 mA
- J = "d"+"e", 4-20 mA mit Relais
- K = "d"+"e", Modbus RTU
- S = "d"+"e"+"ia", Foundation Fieldbus
- T = "d"+"e"+"ia", Foundation Fieldbus SIF
- W = "d"+"e"+"ia", Profibus
- X = "d"+"e"+"ia", Profisafe



**Nomenclature for Junction Box, type EAC 01\*\* (remote sensor)**

EAC 01  $\frac{*}{1} \frac{*}{2}$

- 1: Enclosure material  
0 = Aluminium enclosure  
1 = Stainless steel enclosure

2: Not safety relevant

**Nomenclature for Remote Box, type RCU 0\*\*\***

RCU 0  $\frac{*}{1} \frac{*}{2} \frac{*}{3}$

- 1: Enclosure Material  
2 = Aluminum  
3 = Stainless Steel

2: Not safety relevant

3: Interface

|   |   |                                       |
|---|---|---------------------------------------|
| 0 | = | "d", 4-20 mA                          |
| 1 | = | "d", 4-20 mA with Relay               |
| 2 | = | "d", Modbus RTU                       |
| A | = | "d"+"ia", Foundation Fieldbus         |
| B | = | "d"+"ia", Foundation Fieldbus SIF     |
| E | = | "d"+"ia", Profibus                    |
| F | = | "d"+"ia", Profisafe                   |
| I | = | "d"+"e", 4-20 mA                      |
| J | = | "d"+"e", 4-20 mA with relay           |
| K | = | "d"+"e", Modbus RTU                   |
| S | = | "d"+"e"+"ia", Foundation Fieldbus     |
| T | = | "d"+"e"+"ia", Foundation Fieldbus SIF |
| W | = | "d"+"e"+"ia", Profibus                |
| X | = | "d"+"e"+"ia", Profisafe               |

The relation between ambient temperature and the assigned temperature class is as follows:

Table 1

| Type                                                          | Ambient temperature range | Temperature class (Gas) | Max. surface temperature (Dust) |
|---------------------------------------------------------------|---------------------------|-------------------------|---------------------------------|
| ITR 0*0*<br>XTR 0*0*                                          | -40 °C to +65 °C          | T4                      | T130°C                          |
| All other<br>ITR 0***-, XTR 0***-<br>versions and<br>RCU 0*** | -40 °C to +80 °C          | T4                      | T130°C                          |

| Type                        | Ambient temperature range | Temperature class (Gas) | Max. surface temperature (Dust) |
|-----------------------------|---------------------------|-------------------------|---------------------------------|
| All versions                | -40 °C to +40 °C          | T6                      | T80°C                           |
| ETR 02/032*,<br>ETR 04/052* | -40 °C to +70 °C          | T4                      | T135°C                          |
| ETR 02/030*,<br>ETR 04/050* | -40 °C to +70 °C          | T4                      | T135°C                          |
| ETR 02/030*,<br>ETR 04/050* | -40 °C to +40 °C          | T6                      | T135°C                          |

### **Electrical ratings:**

Maximum supply wattage:  $P_{max}$ : 5 W

### **Supply:**

|                    |                            |
|--------------------|----------------------------|
| ETR 02/03** series | 10...30 VDC, 0.08...0.15 A |
| ITR 02/03** series | 10...30 VDC, 0.1...0.75 A  |
| XTR 02/03** series | 10...30 VDC, 0.1...0.2 A   |
| ETR 04/05** series | 10...30 VDC, 0.1...0.35 A  |
| ITR 04/05** series | 10...30 VDC, 0.3...1.0 A   |
| RCU 02/03** series | 10...30 VDC, 0.3...1.0 A   |
| XTR 04/05** series | 10...30 VDC, 0.15...0.45 A |
| Relay              | 5A, 30 VDC or 230 VAC      |

### **Fieldbus circuit:**

Field device as Fieldbus system in type of protection Intrinsic Safety Ex ia IIC; FISCO in acc. of IEC 60079-11, using only for the interface types A; B; E; F; S; T; W and X

Electrical data,  
Maximum values:

| Type                                                                                         | Voltage, $U_i$ [VDC] | Current, $I_i$ [mA] | Power, $P_i$ [mW] |
|----------------------------------------------------------------------------------------------|----------------------|---------------------|-------------------|
| ETR 04**<br>ETR 05**<br>ITR 04**<br>ITR 05**<br>RCU 02**<br>RCU 03**<br>XTR 04**<br>XTR 05** | 17.5                 | 380                 | 5320              |

For the Gas detection transmitters series ETR \*\*\*\*

**Sensor circuit:** in type of protection Intrinsic safety Ex ia IIC / IIIC; only for connecting DrägerSensor or XS with adapter or ultrasonic sensor



Routine tests:

- Routine tests according to clause 16 of IEC 60079-1 are to be conducted.
- Dielectric tests in accordance with clause 7.1 of IEC 60079-7 are to be conducted.
- For ETR 0\*\*\* series only: Routine test for infallible Transformer according to IEC 60079-11 Ed. 6 §11.2 needs to be performed by the manufacturer with a test voltage of 1500 V for a period of at least 60 s, or alternatively the test might be carried out at 1.2 times the test voltage, but with reduced duration of at least 1 s.

Conditions of certification:

- Repairs on the flameproof joints may only be made in accordance with the manufacturer's structural specifications. Repairs on the basis of the values in tables 1 and 2 of EN 60079-1 are not permitted.
- The device variants incorporating a FISCO fieldbus interface as well as the Gas detection transmitter Type ETR 0\*\*\* must operate in circuits that are limited to overvoltage category I/II/III in accordance with IEC 60664-1 for FISCO field device operation.

Additional notes for safe operation:

- Any compounds attached or installed by the end user (e.g. terminal compartments, bushings, Ex cable glands, connectors) must be of a technical standard that complies with the specifications on the cover sheet. They must be suited for the operating conditions, and be covered by a separate examination certificate, and a separate examination certificate must have been issued for them. The operating conditions set forth in the relevant component certificates must be all means be complied with.
- For relation between ambient temperature and temperature class the installer or end user has to refer to table 1 of this Attachment or manufacturers Installation Instructions.