



# IECEX Certificate of Conformity

## INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification Scheme for Explosive Atmospheres

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

Certificate No.: IECEx PTB 11.0080X Issue No: 2 Certificate history:  
Status: **Current** Page 1 of 4 [Issue No. 2 \(2016-12-09\)](#)  
Date of Issue: **2016-12-09** [Issue No. 1 \(2012-02-27\)](#)  
[Issue No. 0 \(2011-11-17\)](#)  
Applicant: **ecom instruments GmbH**  
Industriestraße 2, 97959 Assamstadt, Germany  
**Germany**  
Equipment: **Intrinsically Safe TRUE RMS MULTIMETER**  
*Optional accessory:* *Fluke 28 II EX*  
Type of Protection: **Equipment for explosive atmospheres - General Requirements, Intrinsic Safety**  
Marking:  
Ex ia IIC T4 Gb  
Ex ia I Ma

Approved for issue on behalf of the IECEx  
Certification Body:

Dr.-Ing. Frank Lienesch

Position:

Department Head "Explosion Protected Sensor Technology and  
Instrumentation"

Signature:  
(for printed version)

Date:

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting the [Official IECEx Website](#).

Certificate issued by:

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





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Manufacturer: **ecom instruments GmbH**  
Industriestraße 2, 97959 Assamstadt, Germany  
**Germany**

Additional Manufacturing location(s):

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 electrical apparatus 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 : 2011** Explosive atmospheres - Part 0: General requirements  
Edition:6.0  
**IEC 60079-11 : 2011** Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"  
Edition:6.0

*This Certificate **does not** indicate compliance with electrical 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 Report:

[DE/PTB/ExTR11.0087/02](#)

Quality Assessment Report:

[DE/PTB/QAR07.0004/03](#)



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## Schedule

### EQUIPMENT:

*Equipment and systems covered by this certificate are as follows:*

The FLUKE 28 II EX is a "TRUE RMS MULTIMETER" for measuring voltage, current, resistance and capacitance within (and outside) of potentially explosive atmospheres. It can be used as an EPL Gb equipment in gas hazardous areas of Group II and as an EPL Ga equipment in a firedamp environment of Group I.

Further details see annex.

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

Further details see annex.



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

The modifications concern used standards. Only IEC 60079-0 (Ed.6.0) and IEC 60079-11 (Ed.6.0) are used.

The labelling is changed. The marking is Ex ia IIC T4 Gb, Ex ia I Ma.

The list of allowed primary cells is changed.

There are minor changes to the internal design

**Annex:**

[Annex IECEx PTB 11.0080X issue 2.pdf](#)



Applicant: ecom instruments GmbH  
Industriestraße 2, 97959 Assamstadt, Germany

Electrical Apparatus: Intrinsically Safe TRUE RMS MULTIMETER type Fluke 28 II Ex

#### Description of equipment

The FLUKE 28 II EX is a "TRUE RMS MULTIMETER" for measuring voltage, current, resistance and capacitance within (and outside) potentially explosive atmospheres. It can be used as an EPL Gb-equipment in gas hazardous areas of Group II and as a category 1-equipment in a firedamp environment of Group I.

The FLUKE 28 II EX is operated with the following accessories:

accessory	type
test leads	TL175
bead temperature probe	80BK-A
alligator clips	AC 172, AC 175
AC current clamp	i400
temperature probe	80PK-27

For the relationship between the permissible max. ambient temperature and the used primary cells reference is made to the following table:

Ambient temperature	Primary Cell
-15°C... +50°C	Eveready Energizer, No. E92 Varta Max Tech, No. 4703 Rayovac, Alkaline AAA (U.S. type)
-10°C... +50°C	Varta Industrial Alkaline, No. 4003
-15°C... +45°C	Panasonic Alkaline Power LR03 Panasonic Pro Power LR03



Electrical data

Supply

Primary cells: 3 alkaline AAA cells  
Types:

1. Eveready Energizer, No. E92
2. Varta Max Tech, No. 4703
3. Varta Industrial Alkaline, No. 4003
4. Rayovac, Alkaline AAA (U.S. type)
5. Panasonic Alkaline Power LR03
6. Panasonic Pro Power LR037

Measuring circuits  
Connections:

In type of protection Intrinsic Safety Ex ia IIC  
resp. Ex ia I

Max. values:

V/Ohm - COM

$U_o = 9.54 \text{ V}$   
 $I_o = 3.7 \text{ mA}$   
 $P_o = \text{negligibly low}$   
 $R_i = 2.47 \text{ K}\Omega$   
Linear characteristic  
 $L_i = \text{negligibly low}$   
 $C_i = \text{negligibly low}$

The max. permissible external inductance  $L_o$  and capacitance  $C_o$  are listed below. For this the simultaneous occurrence of capacitance and inductance is taken into account.

$L_o/\text{mH}$	1000	100	2	0.5	0.1	0.01
$C_o/\mu\text{F}$	0	0.61	1	1.4	2.1	3.6

or

For connection to a certified intrinsically safe circuit.  
 $U_i \leq 65 \text{ V}$

The rules for interconnection of intrinsically safe circuits have to be taken into account.



mA/ $\mu$ A-COM

$$U_o = 1.95 \text{ V}$$

$$I_o = 9.7 \text{ } \mu\text{A}$$

$P_o$  = negligibly low

$L_i$  = negligibly low

$C_i$  = negligibly low

The max. permissible external inductance  $L_o$  and capacitance  $C_o$  are listed below. For this the simultaneous occurrence of capacitance and inductance is taken into account.

$L_o$ /mH	1000	100	5	1	0.5	0.005
$C_o$ / $\mu$ F	0	14	19	25	30	1000

or

For connection to a certified intrinsically safe circuit.

$$U_i \leq 65 \text{ V}$$

The rules for interconnection of intrinsically safe circuits have to be taken into account.

A-COM

$$U_o = 0 \text{ V}$$

$$I_o = 0 \text{ mA}$$

$$P_o = 0 \text{ mW}$$

$L_i$  = negligibly low

$C_i$  = negligibly low

For connection to a certified intrinsically safe circuit.

$$U_i \leq 65 \text{ V}$$

$$I_i \leq 5 \text{ A}$$

The rules for interconnection of intrinsically safe circuits have to be taken into account.

Outside the explosion hazardous area, the intrinsically safe Fluke 28 II Ex TRUE RMS MULTIMETER may be operated with its nominal values ( $U_i \leq 1000\text{V}$  and  $I_i \leq 10\text{A}$ , see also the instructions).

The primary cells shall be only changed outside the hazardous area (note the label).



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Special conditions

1. The permissible max. ambient temperature range is: -15°C... +50°C and depends on the used primary cells (see Safety Instructions).
2. The device shall only be used with the provided (red) Ex-holster inside the explosion hazardous area.
3. The device must not be opened in the hazardous area.
4. The primary cells shall only be changed outside the hazardous area (note the label and safety instructions).
5. Use only the fuses which are tested for the Fluke 28 II EX (see safety instructions).
6. After each measurement of a non-intrinsically safe circuit, the Fluke 28 II Ex must be off for at least 3 minutes before it is put again into a hazardous area.
7. For applications requiring Group I equipment, the permanent contact of the Fluke 28 II EX with oils, hydraulic fluids or greases is to avoid. A fixed installation of the Fluke 28 II EX is not permitted.