



# 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 EESF 19.0010X

Issue No: 0

Certificate history:

Issue No. 0 (2019-04-18)

Status: **Current**

Page 1 of 4

Date of Issue: **2019-04-18**

Applicant: **K-Patents Oy**  
Elannontie 5  
FI-01510 Vantaa  
**Finland**

Equipment: **PR-23-XX Series Process Refractometers (XX = AC, AP, GC, GP, M, MS, RP, SD or W)**

Optional accessory: *n/a*

Type of Protection: **Intrinsically safe**

Marking:

Ex ia IIC T4 Ga  
Ex ia I Ma  
Tamb = -20 °C ... + 65 °C

Approved for issue on behalf of the IECEx  
Certification Body:

Ilkka Riihimäki

Position:

Expert

Signature:  
(for printed version)

Date:

2019-04-18

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](http://www.iecex.com).

Certificate issued by:

**Eurofins Expert Services Oy**  
Kivimiehentie 4,  
FI-02150 Espoo  
Finland



Expert Services



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Page 2 of 4

Manufacturer: **K-Patents Oy**  
Elannontie 5  
FI-01510 Vantaa  
**Finland**

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

**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:

[FI/EESF/ExTR19.0013/00](#)

Quality Assessment Report:

[NL/DEK/QAR12.0032/04](#)



# IECEX Certificate of Conformity

Certificate No: IECEx EESF 19.0010X

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Page 3 of 4

## Schedule

### EQUIPMENT:

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

PR-23-XX Series Process Refractometers are process measurement instruments intended for measuring concentration of process liquids by means of optical refractive index measurement. The instruments are microcontroller-based with several auxiliary measurement functions (internal temperature, humidity, etc.). Sensors communicate with the supply unit by using a two wire connection with both power supply and communications in the same pair.

The metal parts of the enclosure shall be grounded.

The maximum input values of PR-23-XX refractometers are:

$U_i = 24 \text{ V}$                        $I_i = 250\text{mA}$                        $P_i = 1,3 \text{ W}$   
 $C_i = 100 \text{ nF}$                        $L_i = \text{negligible}$

The overall power consumption of the sensor in normal operation is slightly less than 1 W, The sensor is a constant-current load with current set to 41 mA and the supply voltage is less than 24 V.

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

1. The allowed ambient temperature range is  $T_{amb} -20 \text{ °C} \dots +65 \text{ °C}$
2. The enclosure versions which contain aluminium or titanium, there is ignition hazard if the device is subjected to impact or friction.
3. The process heads of PR-23-XX Series Process Refractometer types M, MS and W contain parts that are subject to electrostatic hazard. These types shall only be used for measuring liquids with high conductivity ( $>10000 \text{ pS/m}$ ) in the presence of hazardous atmospheres.
4. The painted surface of the enclosure of PR-23-MS Process Refractometer is subject to electrostatic hazard, therefore the cleaning shall be done only with a damp cloth.



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Certificate No: IECEx EESF 19.0010X

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Date of Issue: 2019-04-18

Page 4 of 4

**Additional information:**

IECEX VTT 08.0004X: Prime certificate

Issue 1: Marking corrected to include EPL Ga.

Issue 2: Temperature upper limit changed from +45 °C to +65 °C.

Issue 3: Compliance with new standard versions IEC 60079-0 and -11 revised.

Issue 4: Ex ia I Ma assessment included. Minor mechanical changes. Several document updates.

Issue 5: Special conditions for safe use revised w.r.t. possibility of electrostatic charging.

IECEX EESF 19.0010X: ExCB name changed from VTT Expert Services to Eurofins Expert Services.