

1. **EU-TYPE EXAMINATION CERTIFICATE**
2. **Equipment or Protective System Intended for use in Potentially explosive atmospheres
Directive 2014/34/EU**
3. EU-Type Examination Certificate Number: **EESF 19 ATEX 028X**
4. Product: **Process Refractometer**
 Certified types: **PR-23-XX Series Process Refractometers**
 (XX = AC, AP, GC, GP, M, MS, RP, SD or W)
5. Manufacturer: **K-Patents Oy**
6. Address: **Elannontie 5, FI-01510 Vantaa, Finland**
7. This product and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.
8. Eurofins Expert Services Oy, Notified Body number 0537, in accordance with Article 17 of 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 confidential report No. **EUFI29-19001226-T1**.
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. 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 1G Ex ia IIC T4 Ga
I M1 Ex ia I Ma
T_{amb} = -20 ... + 65 °C

Espoo, 18.04.2019
Eurofins Expert Services Oy

Ilkka Riihimäki
 Expert

Kari Koskela
 Expert

This document is digitally signed.

13. **Schedule**

 14. **EU-Type Examination Certificate EESF 19 ATEX 028X**

 15. **Description of Product**

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.

 16. **Report Number**

EUF129-19001226-T1

 17. **Specific Conditions of Use**

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.

 18. **Essential Health and Safety Requirements**

The Essential Health and Safety Requirements are covered by the standards listed at item 9.

 19. **Drawings and Documents**

Drawings and documents are listed in the confidential report.

 20. **Certificate History**

Issue	Date	Report No.	Comment
VTT 07 ATEX 065X	16.11.2007	VTT-S-08273-07	Prime certificate
Issue 1	18.03.2011	VTT-S-02145-11	The allowed ambient temperature range changed.
Issue 2	15.10.2012	VTT-S-06673-12	Compliance with new standard versions IEC 60079-0 and -11 revised.
Issue 3	25.05.2015	VTT-S-02201-15	Ex ia I Ma assessment included. Minor mechanical changes. Several document updates. List of documents revised.
Issue 4	21.03.2016	VTT-S-01237-16	Special conditions for safe use revised w.r.t. possibility of electrostatic charging.
EESF 19 ATEX 028X	18.04.2019	EUF129-19001226-T1	NB name changed from VTT Expert Services to Eurofins Expert Services. New certificate template.