



1. **EC-TYPE EXAMINATION CERTIFICATE**

2. **Equipment or Protective System Intended for use  
in Potentially explosive atmospheres  
Directive 94/9/EC**

3. Reference: **VTT 07 ATEX 065X**

4. Equipment: **Process refractometer**

Certified type: **PR-23**

5. Manufactured by: **K-Patents Oy**

6. Address: **Elannontie 5  
FI-01510 Vantaa  
Finland**

7. This equipment or protective system and any acceptable variations thereto is specified in the schedule and possible supplement(s) to this Certificate and the documents therein referred to.

8. VTT, notified body number 0537, in accordance with Article 9 of the Council Directive 94/9/EC of March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective system 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. VTT-S-08273-07.

9. Compliance with the Essential Health and Safety Requirements has been assured by compliance with the standards:

**EN 60079-0 (2006)**  
**EN 60079-11 (2007)**  
**EN 60079-26 (2007)**



10. If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system 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 or protective system in accordance to the directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. This certificate does not cover these.
12. The marking of the equipment or protective system shall include the following:

**II 1G****Ex ia IIC T4 Ga****T<sub>amb</sub> = -20 ... + 45 °C**

Espoo, 16.11.2007

VTT Technical Research Centre of Finland

Risto Sulonen  
Senior research scientistMartti Siirola  
Research scientist

Certificate without signatures shall not be valid.



13. **Schedule**14. **EC-TYPE EXAMINATION CERTIFICATE VTT 07 ATEX 065X**15. Description of Equipment

The PR-23 refractometer is a process measurement instrument which measures the concentration of process liquids by means of optical refractive index measurement. It is a microcontroller-based instrument with several auxiliary measurement functions (internal temperature, humidity, etc) in addition to the refractive index measurement. The sensor communicates with the supply unit with a two wire connection with both power supply and communications in the same pair. The refractometer PR-23 is manufactured by K-Patents Oy.

The metal parts of the enclosure shall be grounded.

Electrical data

The maximum input values of the refractometer PR-23 are:

$$\begin{array}{ll} U_i = 24 \text{ V}, & I_i = 250\text{mA}, P_i = 1,3 \text{ W}, \\ C_i = 100 \text{ nF}, & L_i = \text{negligible small} \end{array}$$

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.

Documents:

List of documents / K-Patents PR-23-Exi, dated 22.10.2007 in the file: PR23EX-list.pdf revision 12Nov07.

16. Report No. VTT-S-08273-07

17. Special conditions for safe use:

1. The allowed ambient temperature range is -20 °C ... +45 °C.
2. The enclosure versions witch contain aluminium or titanium, there is ignition hazard if the device is subjected to impact or friction.

18. Essential Health and Safety Requirements

Compliance is met with the standards referred in point 9.

Espoo. 16.11.2007

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