# EU-TYPE EXAMINATION CERTIFICATE

1. **Equipment or Protective System Intended for use in Potentially explosive atmospheres Directive 2014/34/EU**

2. EU-Type Examination Certificate Number: **EESF 25 ATEX 025X Issue 1**

3. Product: **Process Refractometer PR53**

   Certified types: **PR53ACEX/APEX/GCEX/GPEX/MEX/WEX, EX 'ia' variants**

4. Manufacturer: **Vaisala Oyj**

5. Address: **Vanha Nurmijärventie 21, FI-01670 Vantaa, Finland**

6. This product and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

7. Eurofins Electric & Electronics Finland 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. EUFI29-25001079-T3.

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

   **EN IEC 60079-0:2018/A11:2024** **EN IEC 60079-11:2024**

9. 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.

10. 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.

11. The marking of the product shall include the following:

**PR53MEX/WEX :**

**II 1 G** **Ex ia IIC T4 Ga**
**IP66**
**-40 °C ≤ Ta ≤ +60 °C**

**PR53ACEX/APEX/GCEX/GPEX :**

**II 1 G** **Ex ia IIC T4…150°C(T3) Ga**
**IP66**
**-40 °C ≤ Ta ≤ +60 °C**

Espoo, 29.5.2026
**Eurofins Electric & Electronics Finland Oy**

Jenni Hirvelä
Senior Expert

Kari Koskela
Senior Expert

This document is digitally signed



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12. **Schedule**

13. **EU-Type Examination Certificate EESF 25 ATEX 025X Issue 1**

14. **Description of Product**

The PR53EX inline process refractometers are intended for measuring liquid concentration in the process lines. The measurement is based on the refraction of light in the process medium. The inline process refractometer measures the refractive index (RI) and the temperature of the process medium. Using a pre-defined concentration model, the refractometer uses the measurement data to calculate the concentration. The output value can be read directly from the refractometer through the configurable integrated analogue output channel, through the Modbus RTU interface or HART interface. Alternatively, the refractometer can be connected to the optional Indigo520 Transmitter or Indigo80 Handheld Indicator with an interconnecting cable.

The card has three IS ports: a power input VIN, an RS-485 bus and an analog output. The analog output channel is galvanically separated from the other circuitry.

The input parameters of the device are:

| Terminals VIN+ and VIN-: | Terminals RS-485+ and RS-485-: | | Terminals Analog out + and Analog out -: |
|---|---|---|---|
| Ui = 28 V | Ui = 28 V | Uo = 5 V | Ui = 28 V |
| Ii = 100 mA | Pi = 700 mW | Io = 39 mA | Ii = 100 mA |
| Pi = 700 mW | Li = negligible | Po = 49 mW | Pi = 700 mW |
| Li = negligible | Ci = 1.1 nF | | Li = 16 µH |
| Ci = 1.1 nF | | | Ci = 11.6 nF |

Um = 250 V $AC_{RMS}$ (Service Port)

15. **Report Number:** EUFI29-25001079-T3

16. **Specific Conditions of Use**

1. Allowed ambient temperature range is -40 °C ≤ Ta ≤ +60 °C.
2. The maximum allowed process temperature of types PR53MEX/WEX is 130 °C.
3. The maximum allowed process temperature of types PR53ACEX/APEX/GCEX/GPEX is 150 °C.
4. Ex certified cable glands and blanking elements providing IP66 shall be used only. The fitted thread adapter and blanking element are part of the enclosure and tested accordingly.
5. Manufacturer's instructions for additional cooling shall be observed for high process temperatures when the refractometer is used in ambient temperature higher than normal room temperature.
6. The PTFE flow cell and light covers in PR53MEX are subject to electrostatic charging. Any prolific charge generating mechanisms, such as cleaning with pressurized air or steam, or rubbing with dry cloth shall be avoided.
7. The process connection parts of PR53MEX and PR53WEX are made of PTFE and therefore subject to electrostatic charging. The refractometers shall only be used for measuring liquids with high conductivity (> 10000 pS/m) in the presence of hazardous atmospheres.
8. Titanium sensor head shall be protected from impacts or friction due to spark ignition hazard.

17. **Essential Health and Safety Requirements**

In addition to the Essential Health and Safety Requirements (EHSRs) covered by the standards listed at item 9, the conformity to the EHSRs not covered by the standards is demonstrated in the report referred to at item 16.

18. **Drawings and Documents**

Drawings and documents are listed in the confidential report.

19. **Certificate History**

| Issue | Date | Report No. | Change |
|---|---|---|---|
| EESF 25 ATEX 025X | 7.1.2026 | EUFI29-25001079-T2 | Prime certificate |
| Issue 1 | 29.5.2026 | EUFI29-25001079-T3 | Minor changes |



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**Vaisala Polaris PR53EX variants:**

| Model | Type | Maximum Process Temperature Range | Maximum Process Pressure |
|---|---|---|---|
| ACEX | Sanitary | -40°C to +150°C | 40 bar |
| APEX | Sanitary | -40°C to +150°C | 40 bar |
| GCEX | General purpose | -40°C to +150°C | 40 bar |
| GPEX | General purpose | -40°C to +150°C | 40 bar |
| MEX | Aggressive chemicals | -40°C to +130°C | 10 bar |
| WEX | Aggressive chemicals | -40°C to +130°C | 10 bar |

*A = Sanitary, G = General, P = Probe, C = Compact*

**A COOLING COVER SHALL BE FITTED WHEN HIGH PROCESS TEMPERATURES ARE PRESENT.**

**Manufacturers' instructions for additional cooling shall be observed for high process temperatures when the refractometer is used in ambient temperature higher than normal room temperature.**

**Vaisala Polaris PR53ACEX** sanitary compact process refractometer is designed to measure liquid concentrations, such as Brix.

**Vaisala Polaris PR53APEX** sanitary probe process refractometer is designed for food and beverage, dairy and brewery industry customers, and OEMs to measure liquid concentrations, such as Brix, in applications such as jam cookers and mixing tanks. The AP model may be fitted with different probes.

**Vaisala Polaris PR53GCEX** general-purpose compact process refractometer is designed for measuring concentrations of acids, alkaline solutions, alcohols, hydrocarbons, solvents, and various other solutions. A cooling cover shall be fitted when high process temperatures are present.

**Vaisala Polaris PR53GPEX** general-purpose probe process refractometer is designed for measuring concentrations of sugars/Brix, acids, alkaline solutions, hydrocarbons, solvents, and various other solutions. PR53GPEX has a refinery probe head option that is designed to support the requirements of the refining and petroleum industries. A cooling cover shall be fitted when high process temperatures are present. The GP model may be fitted with different type flanges and probes.

**Vaisala Polaris PR53MEX** process refractometer is designed to measure concentrations of aggressive chemicals, such as hydrochloric acid (HCl), sulfuric acid (H2SO4), N-methylpyrrolidone (NMP) and ammonia (NH3), in the chemical and semiconductor industries. Flare and Pillar connection type variants come with ceramic coated enclosure, and (NPT) tube variant with standard stainless-steel enclosure.

**Vaisala Polaris PR53WEX** valve-body process refractometer is designed to measure concentrations of aggressive chemicals, such as sulfuric acid (H2SO4), hydrochloric acid (HCl), and potassium hydroxide (KOH), in production pipelines such as in the chemical, biochemical, and pharmaceutical industries. PR53W is designed to be mounted into Saunders three (3) different size valve bodies.



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