IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.:	**IECEx EESF 25.0019X**	Page 1 of 6	Certificate history:
Status:	**Current**	Issue No: 2	Issue 1 (2025-12-19) Issue 0 (2025-11-19)
Date of Issue:	2026-05-29		

Applicant: **Vaisala Oyj**
Vanha Nurmijärventie 21
FI-01670 Vantaa
Finland

Equipment: **Process Refractometer PR53, PR53ACEX/APEX/GCEX/GPEX/MEX/WEX**

Optional accessory: N/A

Type of Protection: **Intrinsically Safe / Increased Safety**

Marking: **PR53MEX/WEX:**

Ex ia IIC T4 Ga

Ex ec IIC T4 Gc

IP66

-40 °C ≤ Ta ≤ +60 °C

PR53ACEX/APEX/GCEX/GPEX:

Ex ia IIC T4…150°C(T3) Ga

Ex ec IIC T4…150°C(T3) Gc

IP66

-40 °C ≤ Ta ≤ +60 °C

Approved for issue on behalf of the IECEx Certification Body: **Jenni Hirvelä**

Position: **Senior Expert**

Signature: (for printed version)

Date: (for printed version) 2026-05-29

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2. This certificate is not transferable and remains the property of the issuing body.
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Certificate issued by:

Eurofins Electric & Electronics Finland Oy
Kivimiehentie 4
Espoo FI-02150
Finland

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Manufacturer: **Vaisala Oyj**
Vanha Nurmijärventie 21
FI-01670 Vantaa
Finland

Manufacturing locations:

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 equipment 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 60079-11:2023 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
Edition:7.0

IEC 60079-11:2011 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
Edition:6.0

IEC 60079-7:2017 Explosive atmospheres - Part 7: Equipment protection by increased safety "e"
Edition:5.1

This Certificate **does not** indicate compliance with 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 Reports:

FI/EESF/ExTR25.0020/00 FI/EESF/ExTR25.0047/01

Quality Assessment Report:

FI/EESF/QAR19.0011/04

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EQUIPMENT:
Equipment and systems covered by this Certificate are as follows:

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.

SPECIFIC CONDITIONS OF USE: YES as shown below:

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. For EPL Ga, the titanium sensor head shall be protected from impacts or friction due to spark ignition hazard.

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Equipment (continued):

Type of Protection Ex ec:

U_N = 24 V DC (9 – 30 V DC)

I_N = 42 mA

Type of protection Ex ia:

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-:

Ui = 28 V

Ii = 100 mA

Pi = 700 mW

Li = negligible

Ci = 1.1 nF

Terminals RS-485+ and RS-485-:

Ui = 28 V

Pi = 700 mW

Li = negligible

Ci = 1.1 nF

Uo = 5 V

Io = 39 mA

Po = 49 mW

Terminals Analog out + and Analog out -:

Ui = 28 V

Ii = 100 mA

Pi = 700 mW

Li = 16 µH

Ci = 11.6 nF

Um = 250 V_{RMS} (Service Port)

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

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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.

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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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)
Minor changes. Typographical errors corrected.