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CONFIRMATION

of Product Conformity (QAL1)

Approved AMS:	APOA-380 for O_3
Manufacturer:	Horiba Europe GmbH Hans-Mess-Strasse 6 61440 Oberursel Germany
Test Institute::	TÜV Rheinland Energy & Environment GmbH

This is to certify that the AMS has been tested according to the standards

VDI 4202-1 (2018), EN 14625 (2012), EN 14625 (2024) as well as EN 15267-1 (2009) and EN 15267-2 (2023).

The AMS underwent independent expert testing and was accepted.
This confirmation is valid up to the publication of the certificate,
but no longer than 6 months from the date of issue
(this document contains 5 pages).

This confirmation is valid until: 30 April 2026

TÜV Rheinland Energy & Environment GmbH
Cologne, 4 July 2025

i. V. Dipl.-Ing. G. Baum

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Test institute accredited to EN ISO/IEC 17025 by DAkkS (German Accreditation Body).
This accreditation is limited to the accreditation scope defined in the enclosure to certificate D-PL-11120-02-00.

Confirmation:
4 July 2025

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Test Report:	EuL/21262682/C dated 7 February 2025
Expiry date:	30 April 2026

Approved application
The tested AMS is suitable for continuous immission measurement of O_3 in stationary use.

The suitability of the AMS for this application was assessed on the basis of a laboratory test and a three month field test.

The AMS is approved for an ambient temperature range of +0° to 40°C.

The notification of suitability of the AMS, performance testing and the uncertainty calculation have been effected on the basis of the regulations applicable at the time of testing. As changes in legal provisions are possible, any potential user should ensure that this AMS is suitable for monitoring the measured values relevant to the application.

Any potential user should ensure, in consultation with the manufacturer, that this AMS is suitable for the intended purpose.

Note
The legal regulations mentioned do not correspond to the current state of legislation in every case. Each user should, if necessary, in consultation with the competent authority, ensure that this AMS meets the legal requirements for the intended use. In addition, it cannot be ruled out that legal regulations governing the use of a measuring device for emission monitoring may change during the lifetime of the certificate.

Basis of the confirmation
This confirmation is based on:

- Test report EuL/21262682/C dated 7 February 2025 issued by TÜV Rheinland Energy & Environment GmbH
- The ongoing surveillance of the product and the manufacturing process
- Expert testing and approval by an independent body

AMS designation:
APOA-380 for Ozon

Manufacturer:
Horiba Europe GmbH, Oberursel, Germany

Field of application:
For continuous ambient air monitoring of O_3 (stationary operation)

Measuring ranges during performance testing:

Component	Certification range	Unit
Ozon	0–500	µg/m³

Software version:

A7:	P2002638B	1.01
M4:	P2002642A	1.00
Analyzer:	P2002584B	1.02
FPGA:	P2002759A	1.01

Restrictions:
none

Notes:
1. The measuring system also fulfils the requirements of DIN EN 14625:2024
2. The test report on the suitability test can be viewed on the Internet at www.qal1.de.

Test Institute:
TÜV Rheinland Energy & Environment GmbH, Cologne
Report No.: EuL/21262682/C dated 7 February 2025

Tested product

This confirmation applies to automated measurement systems conforming to the following description:

The APOA-380 ambient air monitoring system is a continuous ozone analyser. The measuring principle is based on ultraviolet absorption. The device was developed for the continuous measurement of ozone in ambient air.

The measuring principle is based on the determination of light absorption by the gas to be measured in the wavelength range characteristic of the gas, which for the ozone component is in the UV range at a wavelength of 254 nm. The evaluation is carried out by measuring the absorption on the basis of the dependence between the gas concentration and the amount of absorbed light according to Lambert-Beer's law.

Lambert-Beer's law:

$$I = I_0 * e^{-(\alpha L c)}$$ at standard temperature and pressure (STP)

I	Intensity with absorption.
I0	Light intensity without absorption.
L	Path travelled by the light during absorption.
c	Concentration of the absorbing gas, in this case O3
α	Absorption coefficient (this provides information about the degree of absorption).

To solve this equation for c, it must be rearranged as follows:

$$c = \ln(I_0 / I) * (1 / \alpha L)$$ at STP

As both the ambient temperature and pressure influence the density of the sampling gas and therefore the number of ozone molecules present in the absorption tube, the amount of absorbed light is changed.

To clarify this effect, the equation was extended by the following addition:

$$c = \ln(I_0 / I) * (1 / \alpha L) * (T/273K * 29{,}92inHg/p)$$

T = sample temperature in Kelvin
p = sample pressure in inches of mercury

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Gerätetechnische Daten APOA-380:

Messbereich:	Maximal 0 – 10 ppm (auswählbar)
Einheiten:	ppb / ppm / µg/m³ / mg/m³
Gemessene Verbindungen:	Ozon
Probenfluss:	ca. 0,6 Liter/min (während der Prüfung)
Ausgänge:	Ethernet TCP/IP Modbus Serielle Schnittstelle, RS232 0 – 1/5/10 Volt analog 4 – 20 mA analog USB
Eingangsspannung:	100 V bis 240 V, 50 Hz oder 60 Hz
Leistung:	80 W; maximal 140 W
Abmessungen (L x B x H)	568 x 430 x 221 mm
Gewicht:	ca. 15 kg