Umwelt Bundesamt

TÜVRheinland®
Precisely Right.

CERTIFICATE

of Product Conformity (QAL1)

Certificate No.: 0000043106_04

Certified AMS:	O3 42e / O3 42e* for O_3
Manufacturer:	ENVEA 111, Boulevard Robespierre 78304 Poissy Cedex France
Test Institute:	TÜV Rheinland Energy & Environment GmbH

This is to certify that the AMS has been tested and found to comply with the standards VDI 4202-1 (2018), EN 14625 (2012), EN 14625 (2024) as well as EN 15267-1 (2009) and EN 15267-2 (2023).

Certification is awarded in respect of the conditions stated in this certificate (this certificate contains 11 pages).
The present certificate replaces certificate 0000043106_03 dated 28 March 2025.

TÜVRheinland® CERTIFIED
Suitability Tested
Complying with 2008/50/EC
EN 15267
Regular Surveillance
www.tuv.com
ID 0000043106

Publication in the German Federal Gazette (BAnz) of 1 August 2016

German Environment Agency

Dessau, 23 March 2026

This certificate will expire on:
22 March 2031

TÜV Rheinland
Energy & Environment GmbH
Cologne, 20 March 2026

Dr. Marcel Langner
Head of Section II 4

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TÜV Rheinland Energy & Environment GmbH
Am Grauen Stein
51105 Köln

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 the certificate D-PL-11120-02-00.

Test report:	936/21225396/B dated 26 February 2016 and Addendum EuL/21264142/C_V1 dated 7 February 2025
Initial certification:	2 April 2015
Expiry date:	22 March 2031
Publication:	BAnz AT 01.08.2016 B11, chapter III No. 1.1 and BAnz AT 31.10.2025 B5, chapter IV notification 38

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 at a location close to transport links.

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

Basis of the certification
This certification is based on:

- Test report 936/21225396/B dated 26 February 2016 of TÜV Rheinland Energie und Umwelt GmbH and Addendum EuL/21264142/C_V1 dated 7 February 2025 of TÜV Rheinland Energy & Environment GmbH
- Suitability announced by the German Federal Environment Agency (UBA) as the relevant body
- The ongoing surveillance of the product and the manufacturing process

Publication in the German Federal Gazette: BAnz AT 01.08.2016 B11, chapter III No. 1.1, Announcement by UBA dated 14 July 2016:

AMS designation:
O3 42e* / O3 42e for Ozone

Manufacturer:
Environnement S.A., Poissy, France

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

Measuring ranges during the performance test:

Component	Certification range	Unit
Ozone	0 – 500	µg/m³

Software version:
O3 42e Version: 1.0.4
O3 42e* Version: 1.0.3

Restrictions:
None

Notes:
1. Measured values are displayed by means of a connected PC or Laptop.
2. The performance test also includes the O3 42e instrument version with integrated display.
3. The report on the performance test is available online at www.qal1.de.
4. Supplementary testing (optimization of the LED's wavelength range as well as pressure compensation) as regards Federal Environment Agency (UBA) notices of 25 February 2015 (BAnz AT 02.04.2015 B5, chapter III number 1.1) and of 22 July 2015 (BAnz AT 26.08.2015 B4, chapter IV notification 47).

Test Report:
TÜV Rheinland Energie und Umwelt GmbH, Cologne
Report No.: 936/21225396/B dated 26 February 2016

Publication in the German Federal Gazette: BAnz AT 19.05.2025 B3, chap. IV notification 86, Announcement by UBA dated 2 April 2025

86 Notification as regards Federal Environment Agency (UBA) notices of 14 July 2016 (BAnz AT 01.08.2016 B11, chapter III number 1.1) and of 21 February 2023 (BAnz AT 20.03.2023 B6, chapter IV notification 68)

The current software version for the O342e*/O342e measuring system for ozone from ENVEA is:
v1.2.b

Software version v1.2.a can also be used.
The measuring system can be equipped with a revised version of the ARM20 board.

Statement issued by TÜV Rheinland Energy & Environment GmbH dated 4 October 2024

The basis for this certificate is the publication of the following announcement:

Publication in the German Federal Gazette: BAnz AT 31.10.2025 B5, chap. IV notification 38, Announcement by UBA dated 27 August 2025

38 Notification as regards Federal Environment Agency (UBA) notices of 14 July 2016 (BAnz AT 01.08.2016 B11, chapter III number 1.1) and of 02 April 2025 (BAnz AT 19.05.2025 B3, chapter IV, notification 86)

The current software version for the O342e*/O342e measuring system for ozone from ENVEA is
v1.3.a

From software version v1.3.a, the measuring system fulfils the requirements of EN 14625 (2024 version).

An addendum to the test report with the report number EuL/21264142/C_V1 can be viewed on the internet at www.qal1.de.

Statement issued by TÜV Rheinland Energy & Environment GmbH dated 20 May 2025

Certified product

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

The ambient air monitor O342e* is a continuous ozone monitor. The measurement principle is based on ultraviolet absorption. The instrument was developed for the continuous measurement of ozone concentrations in ambient air.
The measurement principle of the O342e* is based on UV photometry according to the Beer-Lambert law. The absorption spectrum of ozone has its maximum in the wavelength range of 250 to 270 nanometres. The monochromatic UV-LED light source of the O342e* is adjusted to a wavelength of 255 nm and therefore within the maximum absorption range of ozone.

The O342e* analyser uses non-dispersive ultraviolet (UV) absorption technology to measure ozone concentrations. The sample to be analysed is led to the measurement module via a dust filter. The measurement module consists of the following parts:

- LED for monochromatic UV light with a wavelength of 255 nm, placed under a protective cover, which is fastened with 4 screws. The LED card is directly connected to the card of the reference photodetector.
- Two photodetector cards: the reference photodetector card for measuring the energy of the incoming LED light (UV0) and the photodetector card for measuring UV absorption, which enables detection of signals i and i_0. Both cards are mounted beneath a protective cover to protect them against interfering light.
- The optical chamber consists of a beam splitter and a convex, flat lens for concentrating the light on the reference photodetector. In the optical chamber, the LED light can be distributed to reference photodetector and measuring chamber.
- A measurement chamber consisting of a glass tube and two mechanical parts at the inlet and outlet where the LED light is absorbed. The optical path length for the sample gas is 400 mm.
- Cycle solenoid valve by means of which the sample gas can either cyclically or alternately be changed over to cycle channel i or cycle channel io.
- A flow restrictor which regulates the sample gas flow to 55 litres/hour. The excess flow valve is mounted at the fluid outlet of the measurement chamber.
- Ozone filter which can filter out any trace of ozone from the sample gas
- Connection for the pressure sensor
- Type PT1000 temperature sensor
- Gas inlet

The AMS is available in two versions:

- The version O342e is fitted with a TFT LCD coloured display with backlight and a touch screen function. Signal output as well as operation can also be carried out via the web browser using an external PC connected via Ethernet.
- The version O342e * is not fitted with a display. Signal output as well as operation can only be operated via the web browser on an external PC connected via Ethernet.

Apart from that, both versions of the AMS are of identical design.

General notes

This certificate is based upon the equipment tested. The manufacturer is responsible for ensuring that on-going production complies with the requirements of the EN 15267. The manufacturer is required to maintain an approved quality management system controlling the manufacture of the certified product. Both the product and the quality management systems shall be subject to regular surveillance.

If a product of the current production does not conform to the certified product, TÜV Rheinland Energy & Environment GmbH must be notified at the address given on page 1.

A certification mark with an ID-Number that is specific to the certified product is presented on page 1 of this certificate. This certification mark may be applied to the product or used in advertising materials for the certified product.

This document as well as the certification mark remains property of TÜV Rheinland Energy & Environment GmbH. With revocation of the publication the certificate loses its validity. After the expiration of the certificate and on request of TÜV Rheinland Energy & Environment GmbH this document shall be returned and the certificate mark must not be employed anymore.

The relevant version of this certificate and its expiration is also accessible on the internet: **qal1.de**.

History of documents
Certification of O342e / O342e* is based on the documents listed below and the regular, continuous monitoring of the Quality Management System of the manufacturer:

Initial certification according to EN 15267
Certificate No. 0000043106_00: 30 April 2015
Expiry date of the certificate: 1 April 2020
Test report: 936/21225396/A dated 1 October 2014
TÜV Rheinland Energie und Umwelt GmbH
Publication: BAnz AT 02.04.2015 B5, chapter III number 1.1
UBA announcement dated 25 February 2015

Notifications
Statement issued by TÜV Rheinland Energie und Umwelt GmbH dated 16 March 2015
Publication: BAnz AT 26.08.2015 B4, chapter V notification 47
UBA announcement dated 22 July 2015
(Software changes)

Supplementary testing according to EN 15267
Certificate No. 0000043106_01: 19 August 2016
Expiry date of the certificate: 1 April 2020
Test report: 936/21225396/B dated 26 February 2016
TÜV Rheinland Energie und Umwelt GmbH
Publication: BAnz AT 01.08.2016 B11, chapter III number 1.1
UBA announcement dated 14 July 2016

Notifications
Statement issued by TÜV Rheinland Energy GmbH dated 27 September 2018
Publication: BAnz AT 26.03.2019 B7, chapter IV notification 30
UBA announcement dated 27 February 2019
(Software changes)

Statement issued by TÜV Rheinland Energy GmbH dated 1 October 2019
Publication: BAnz AT 24.03.2020 B7, chapter IV notification 35
UBA announcement dated 24 February 2020
(Software changes and new producer name formerly Environnement S.A.)

Renewal of certificates
Certificate No. 0000043106_02: 2 April 2020
Expiry date of the certificate: 1 April 2025

Notifications
Statement issued by TÜV Rheinland Energy GmbH dated 9 September 2020
Publication: BAnz AT 03.05.2021 B9, chapter III notification 22
UBA announcement dated 31 March 2021
(Software and hardware changes)

Statement issued by TÜV Rheinland Energy GmbH dated 16 September 2021
Publication: BAnz AT 11.04.2022 B10, chapter VI notification 12
UBA announcement dated 9 March 2022
(Software changes)

Statement issued by TÜV Rheinland Energy GmbH dated 9 September 2022
Publication: BAnz AT 20.03.2023 B6, chapter IV notification 68
UBA announcement dated 21 February 2023
(Software changes)

Renewal of certificates
Certificate No. 0000043106_03: 28 March 2025
Expiry date of the certificate: 1 April 2030

Notifications
Statement issued by TÜV Rheinland Energy & Environment GmbH dated 4 October 2024
Publication: BAnz AT 19.05.2025 B3, chapter IV notification 86
UBA announcement dated 2 April 2025
(Software and hardware changes)

Certificate based on a notification
Certificate No. 0000043106_04: 23 March 2026
Expiry date of the certificate: 22 March 2031
Statement issued by TÜV Rheinland Energy & Environment GmbH dated 20 May 2025
Addendum EuL/21264142/C_V1 dated 7 February 2025
Publication: BAnz AT 31.10.2025 B5, chapter IV notification 38
UBA announcement dated 27 August 2025

Umwelt Bundesamt

Certificate:
0000043106_04 / 23 March 2026

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Expanded uncertainty laboratory (DIN EN 14625:2012), system 1

Measuring device:	Environnement O3 42e*			Serial-No.:	SN 12 / SN 23
Measured component:	O_3			1h-alert threshold:	120 nmol/mol

No.	Performance characteristic	Performance criterion	Result	Partial uncertainty		Square of partial uncertainty
1	Repeatability standard deviation at zero	≤ 1.0 nmol/mol	0,020	$u_{r,z}$	0,00	0,0000
2	Repeatability standard deviation at 1h-alert threshold	≤ 3.0 nmol/mol	0,070	$u_{r,lh}$	0,01	0,0001
3	"lack of fit" at 1h-alert threshold	≤ 4.0% of measured value	0,880	$u_{l,lh}$	0,61	0,3717
4	Sensitivity coefficient of sample gas pressure at 1h-alert threshold	≤ 2.0 nmol/mol/kPa	0,130	u_{gp}	1,44	2,0656
5	Sensitivity coefficient of sample gas temperature at 1h-alert threshold	≤ 1.0 nmol/mol/K	0,010	u_{gt}	0,11	0,0122
6	Sensitivity coefficient of surrounding temperature at 1h-alert threshold	≤ 1.0 nmol/mol/K	0,392	u_{st}	2,92	8,5280
7	Sensitivity coefficient of electrical voltage at 1h-alert threshold	≤ 0.30 nmol/mol/V	0,010	u_V	0,13	0,0166
8a	Interferent H_20 with 21 mmol/mol	≤ 10 nmol/mol (Zero)	0,300	u_{H2O}	-2,14	4,5862
		≤ 10 nmol/mol (Span)	-2,870			
8b	Interferent Toluene with 0,5 µmol/mol	≤ 5.0 nmol/mol (Zero)	0,870	$u_{int,pos}$	0,81	0,6533
		≤ 5.0 nmol/mol (Span)	0,400	or		
8c	Interferent Xylene with 0,5 µmol/mol	≤ 5.0 nmol/mol (Zero)	1,760			
		≤ 5.0 nmol/mol (Span)	1,000	$u_{int,neg}$		
9	Averaging effect	≤ 7.0% of measured value	-4,280	u_{av}	-2,97	8,7928
18	Difference sample/calibration port	≤ 1.0%	-0,350	$u_{\Delta sc}$	-0,42	0,1764
21	Uncertainty of test gas	≤ 3.0%	2,000	u_{cg}	1,20	1,4400

Combined standard uncertainty	u_c	5,1617	nmol/mol
Expanded uncertainty	U	10,3234	nmol/mol
Relative expanded uncertainty	W	8,60	%
Maximum allowed expanded uncertainty	W_{req}	15	%

Expanded uncertainty laboratory (DIN EN 14625:2012), system 2

Measuring device:	Environnement O3 42e*			Serial-No.:	SN 14 / SN 24
Measured component:	O_3			1h-alert threshold:	120 nmol/mol

No.	Performance characteristic	Performance criterion	Result	Partial uncertainty		Square of partial uncertainty
1	Repeatability standard deviation at zero	≤ 1.0 nmol/mol	0,020	$u_{r,z}$	0,00	0,0000
2	Repeatability standard deviation at 1h-alert threshold	≤ 3.0 nmol/mol	0,090	$u_{r,lv}$	0,01	0,0002
3	"lack of fit" at 1h-alert threshold	≤ 4.0% of measured value	2,370	$u_{l,lv}$	1,64	2,6961
4	Sensitivity coefficient of sample gas pressure at 1h-alert threshold	≤ 2.0 nmol/mol/kPa	0,030	u_{gp}	0,34	0,1124
5	Sensitivity coefficient of sample gas temperature at 1h-alert threshold	≤ 1.0 nmol/mol/K	0,020	u_{gt}	0,22	0,0489
6	Sensitivity coefficient of surrounding temperature at 1h-alert threshold	≤ 1.0 nmol/mol/K	0,231	u_{st}	1,72	2,9614
7	Sensitivity coefficient of electrical voltage at 1h-alert threshold	≤ 0.30 nmol/mol/V	0,020	u_V	0,26	0,0665
8a	Interferent H_20 with 21 mmol/mol	≤ 10 nmol/mol (Zero)	0,530	u_{H2O}	-2,01	4,0590
		≤ 10 nmol/mol (Span)	-2,700			
8b	Interferent Toluene with 0,5 µmol/mol	≤ 5.0 nmol/mol (Zero)	0,930	$u_{int,pos}$	0,75	0,5633
		≤ 5.0 nmol/mol (Span)	0,400	or		
8c	Interferent Xylene with 0,5 µmol/mol	≤ 5.0 nmol/mol (Zero)	1,100			
		≤ 5.0 nmol/mol (Span)	0,900	$u_{int,neg}$		
9	Averaging effect	≤ 7.0% of measured value	-4,770	u_{av}	-3,30	10,9214
18	Difference sample/calibration port	≤ 1.0%	-0,360	u_{Dsc}	-0,43	0,1866
21	Uncertainty of test gas	≤ 3.0%	2,000	ucg	1,20	1,4400

Combined standard uncertainty	u_c	4,8017	nmol/mol
Expanded uncertainty	U	9,6033	nmol/mol
Relative expanded uncertainty	W	8,00	%
Maximum allowed expanded uncertainty	W_{req}	15	%

Combined uncertainty, laboratory and field (EN 14625:2012), system 1

Measuring device:	Environnement O3 42e*			Serial-No.:	SN 12 / SN 23
Measured component:	O_3			1h-alert threshold:	120 nmol/mol

No.	Performance characteristic	Performance criterion	Result	Partial uncertainty		Square of partial uncertainty
1	Repeatability standard deviation at zero	≤ 1.0 nmol/mol	0,020	$u_{r,z}$	0,00	0,0000
2	Repeatability standard deviation at 1h-alert threshold	≤ 3.0 nmol/mol	0,070	$u_{r,lh}$	not considered, as ur,lh = 0,01 < ur,f	-
3	"lack of fit" at 1h-alert threshold	≤ 4.0% of measured value	0,880	$u_{l,lh}$	0,61	0,3717
4	Sensitivity coefficient of sample gas pressure at 1h-alert threshold	≤ 2.0 nmol/mol/kPa	0,130	u_{gp}	1,44	2,0656
5	Sensitivity coefficient of sample gas temperature at 1h-alert threshold	≤ 1.0 nmol/mol/K	0,010	u_{gt}	0,11	0,0122
6	Sensitivity coefficient of surrounding temperature at 1h-alert threshold	≤ 1.0 nmol/mol/K	0,392	u_{st}	2,92	8,5280
7	Sensitivity coefficient of electrical voltage at 1h-alert threshold	≤ 0.30 nmol/mol/V	0,010	u_V	0,13	0,0166
8a	Interferent H_20 with 21 mmol/mol	≤ 10 nmol/mol (Zero)	0,300	u_{H2O}	-2,14	4,5862
		≤ 10 nmol/mol (Span)	-2,870			
8b	Interferent Toluene with 0,5 µmol/mol	≤ 5.0 nmol/mol (Zero)	0,870	$u_{int,pos}$	0,81	0,6533
		≤ 5.0 nmol/mol (Span)	0,400	or		
8c	Interferent Xylene with 0,5 µmol/mol	≤ 5.0 nmol/mol (Zero)	1,760			
		≤ 5.0 nmol/mol (Span)	1,000	$u_{int,neg}$		
9	Averaging effect	≤ 7.0% of measured value	-4,280	u_{av}	-2,97	8,7928
10	Reproducibility standard deviation under field conditions	≤ 5.0% of average over 3 months	2,590	$u_{r,f}$	3,11	9,6597
11	Long term drift at zero level	≤ 5.0 nmol/mol	0,590	$u_{d,l,z}$	0,34	0,1160
12	Long term drift at span level	≤ 5.0% of max. of certification range	1,190	$u_{d,l,lh}$	0,82	0,6797
18	Difference sample/calibration port	≤ 1.0%	-0,350	$u_{\Delta sc}$	-0,42	0,1764
21	Uncertainty of test gas	≤ 3.0%	2,000	u_{cg}	1,20	1,4400

Combined standard uncertainty	u_c	6,0908	nmol/mol
Expanded uncertainty	U	12,1817	nmol/mol
Relative expanded uncertainty	W	10,15	%
Maximum allowed expanded uncertainty	W_{req}	15	%

Umwelt Bundesamt

Certificate:
0000043106_04 / 23 March 2026

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Combined uncertainty, laboratory and field (EN 14625:2012), system 2

Measuring device:	Environnement O3 42e*			Serial-No.:	SN 14 / SN 24
Measured component:	O_3			1h-alert threshold:	120 nmol/mol

No.	Performance characteristic	Performance criterion	Result	Partial uncertainty		Square of partial uncertainty
1	Repeatability standard deviation at zero	≤ 1.0 nmol/mol	0,020	$u_{r,z}$	0,00	0,0000
2	Repeatability standard deviation at 1h-alert threshold	≤ 3.0 nmol/mol	0,090	$u_{r,lh}$	not considered, as ur,lh = 0,01 < ur,f	-
3	"lack of fit" at 1h-alert threshold	≤ 4.0% of measured value	2,370	$u_{l,lh}$	1,64	2,6961
4	Sensitivity coefficient of sample gas pressure at 1h-alert threshold	≤ 2.0 nmol/mol/kPa	0,030	u_{gp}	0,34	0,1124
5	Sensitivity coefficient of sample gas temperature at 1h-alert threshold	≤ 1.0 nmol/mol/K	0,020	u_{gt}	0,22	0,0489
6	Sensitivity coefficient of surrounding temperature at 1h-alert threshold	≤ 1.0 nmol/mol/K	0,231	u_{st}	1,72	2,9614
7	Sensitivity coefficient of electrical voltage at 1h-alert threshold	≤ 0.30 nmol/mol/V	0,020	u_V	0,26	0,0665
8a	Interferent H_20 with 21 mmol/mol	≤ 10 nmol/mol (Zero)	0,530	u_{H2O}	-2,01	4,0590
		≤ 10 nmol/mol (Span)	-2,700			
8b	Interferent Toluene with 0,5 µmol/mol	≤ 5.0 nmol/mol (Zero)	0,930	$u_{int,pos}$	0,75	0,5633
		≤ 5.0 nmol/mol (Span)	0,400	or		
8c	Interferent Xylene with 0,5 µmol/mol	≤ 5.0 nmol/mol (Zero)	1,100			
		≤ 5.0 nmol/mol (Span)	0,900	$u_{int,neg}$		
9	Averaging effect	≤ 7.0% of measured value	-4,770	u_{av}	-3,30	10,9214
10	Reproducibility standard deviation under field conditions	≤ 5.0% of average over 3 months	2,590	$u_{r,f}$	3,11	9,6597
11	Long term drift at zero level	≤ 5.0 nmol/mol	0,850	$u_{d,z}$	0,49	0,2408
12	Long term drift at span level	≤ 5.0% of max. of certification range	1,450	$u_{d,lh}$	1,00	1,0092
18	Difference sample/calibration port	≤ 1.0%	-0,360	$u_{\Delta sc}$	-0,43	0,1866
21	Uncertainty of test gas	≤ 3.0%	2,000	u_{cg}	1,20	1,4400

Combined standard uncertainty	u_c	5,8280	nmol/mol
Expanded uncertainty	U	11,6560	nmol/mol
Relative expanded uncertainty	W	9,71	%
Maximum allowed expanded uncertainty	W_{req}	15	%

Expanded uncertainty laboratory (EN 14625:2024), system 1

Measuring device:	O342e / O342e*			Serial-No.:	SN 12 / 23 / 1688
Measured component:	O_3			1h-alert threshold:	120 nmol/mol

No.	Performance characteristic	Performance criterion	Result	Partial uncertainty		Square of partial uncertainty
1	Repeatability standard deviation at zero	≤ 1.0 nmol/mol	0,020	$u_{r,z}$	0,00	0,00
2	Repeatability standard deviation at 1h-alert threshold	≤ 3.0 nmol/mol	0,070	$u_{r,lh}$	0,01	0,00
3	"lack of fit" at 1h-alert threshold	≤ 4.0% of measured value	0,880	$u_{l,lh}$	0,61	0,37
4	Sensitivity coefficient of sample gas pressure at 1h-alert threshold	≤ 2.0 nmol/mol/kPa	0,160	u_{gp}	1,18	1,39
5	Sensitivity coefficient of sample gas temperature at 1h-alert threshold	≤ 1.0 nmol/mol/K	0,030	u_{gt}	0,39	0,15
6	Sensitivity coefficient of surrounding temperature at 1h-alert threshold	≤ 1.0 nmol/mol/K	0,183	u_{st}	2,39	5,69
7	Sensitivity coefficient of electrical voltage at 1h-alert threshold	≤ 0.30 nmol/mol/V	0,010	u_V	0,13	0,02
8a	Interferent H_2O with 21 mmol/mol	≤ 10 nmol/mol (Zero)	0,300	u_{H2O}	-2,14	4,59
		≤ 10 nmol/mol (Span)	-2,870			
8b	Interferent Toluene with 0,5 µmol/mol	≤ 5.0 nmol/mol (Zero)	0,870	$u_{int,pos}$	0,81	0,65
		≤ 5.0 nmol/mol (Span)	0,400	or		
8c	Interferent Xylene with 0,5 µmol/mol	≤ 5.0 nmol/mol (Zero)	1,760			
		≤ 5.0 nmol/mol (Span)	1,000	$u_{int,neg}$		
9	Averaging effect	≤ 7.0% of measured value	-4,280	u_{av}	-2,97	8,79
18	Difference sample/calibration port	≤ 1.0%	-0,350	$u_{\Delta sc}$	-0,42	0,18
21	Uncertainty of test gas	≤ 3.0%	2,000	u_{cg}	1,20	1,44

Combined standard uncertainty	u_c	4,82	nmol/mol
Expanded uncertainty	U	9,65	nmol/mol
Relative expanded uncertainty	W	8,04	%
Maximum allowed expanded uncertainty	W_{req}	15	%

Expanded uncertainty laboratory (EN 14625:2024), system 2

Measuring device:	O342e / O342e*			Serial-No.:	SN 14 / 24 / 1735
Measured component:	O_3			1h-alert threshold:	120 nmol/mol

No.	Performance characteristic	Performance criterion	Result	Partial uncertainty		Square of partial uncertainty
1	Repeatability standard deviation at zero	≤ 1.0 nmol/mol	0,020	$u_{r,z}$	0,00	0,00
2	Repeatability standard deviation at 1h-alert threshold	≤ 3.0 nmol/mol	0,090	$u_{r,lv}$	0,01	0,00
3	"lack of fit" at 1h-alert threshold	≤ 4.0% of measured value	2,370	$u_{l,lv}$	1,64	2,70
4	Sensitivity coefficient of sample gas pressure at 1h-alert threshold	≤ 2.0 nmol/mol/kPa	0,210	u_{gp}	1,56	2,45
5	Sensitivity coefficient of sample gas temperature at 1h-alert threshold	≤ 1.0 nmol/mol/K	0,040	u_{gt}	0,52	0,27
6	Sensitivity coefficient of surrounding temperature at 1h-alert threshold	≤ 1.0 nmol/mol/K	0,049	u_{st}	0,64	0,41
7	Sensitivity coefficient of electrical voltage at 1h-alert threshold	≤ 0.30 nmol/mol/V	0,020	u_V	0,26	0,07
8a	Interferent H_2O with 21 mmol/mol	≤ 10 nmol/mol (Zero)	0,530	u_{H2O}	-2,01	4,06
		≤ 10 nmol/mol (Span)	-2,700			
8b	Interferent Toluene with 0,5 µmol/mol	≤ 5.0 nmol/mol (Zero)	0,930	$u_{int,pos}$	0,75	0,56
		≤ 5.0 nmol/mol (Span)	0,400	or		
8c	Interferent Xylene with 0,5 µmol/mol	≤ 5.0 nmol/mol (Zero)	1,100			
		≤ 5.0 nmol/mol (Span)	0,900	$u_{int,neg}$		
9	Averaging effect	≤ 7.0% of measured value	-4,770	u_{av}	-3,30	10,92
18	Difference sample/calibration port	≤ 1.0%	-0,360	u_{Dsc}	-0,43	0,19
21	Uncertainty of test gas	≤ 3.0%	2,000	ucg	1,20	1,44

Combined standard uncertainty	u_c	4,80	nmol/mol
Expanded uncertainty	U	9,60	nmol/mol
Relative expanded uncertainty	W	8,00	%
Maximum allowed expanded uncertainty	W_{req}	15	%

Combined uncertainty, laboratory and field (EN 14625:2024), system 1

Measuring device:	O342e / O342e*				Serial-No.:	SN 12 / 23 / 1688	
Measured component:	O_3				1h-alert threshold:	120	nmol/mol

No.	Performance characteristic	Performance criterion	Result	Partial uncertainty		Square of partial uncertainty
1	Repeatability standard deviation at zero	≤ 1.0 nmol/mol	0,020	$u_{r,z}$	0,00	0,00
2	Repeatability standard deviation at 1h-alert threshold	≤ 3.0 nmol/mol	0,070	$u_{r,lh}$	not considered, as ur,lh = 0,01 < ur,f	-
3	"lack of fit" at 1h-alert threshold	≤ 4.0% of measured value	0,880	$u_{l,lh}$	0,61	0,37
4	Sensitivity coefficient of sample gas pressure at 1h-alert threshold	≤ 2.0 nmol/mol/kPa	0,160	u_{gp}	1,18	1,39
5	Sensitivity coefficient of sample gas temperature at 1h-alert threshold	≤ 1.0 nmol/mol/K	0,030	u_{gt}	0,39	0,15
6	Sensitivity coefficient of surrounding temperature at 1h-alert threshold	≤ 1.0 nmol/mol/K	0,183	u_{st}	2,39	5,69
7	Sensitivity coefficient of electrical voltage at 1h-alert threshold	≤ 0.30 nmol/mol/V	0,010	u_V	0,13	0,02
8a	Interferent H_2O with 21 mmol/mol	≤ 10 nmol/mol (Zero)	0,300	u_{H2O}	-2,14	4,59
		≤ 10 nmol/mol (Span)	-2,870			
8b	Interferent Toluene with 0,5 µmol/mol	≤ 5.0 nmol/mol (Zero)	0,870	$u_{int,pos}$	0,81	0,65
		≤ 5.0 nmol/mol (Span)	0,400	or		
8c	Interferent Xylene with 0,5 µmol/mol	≤ 5.0 nmol/mol (Zero)	1,760			
		≤ 5.0 nmol/mol (Span)	1,000	$u_{int,\ neg}$		
9	Averaging effect	≤ 7.0% of measured value	-4,280	u_{av}	-2,97	8,79
10	Reproducibility standard deviation under field conditions	≤ 5.0% of average over 3 months	2,590	$u_{r,f}$	3,11	9,66
11	Long term drift at zero level	≤ 5.0 nmol/mol	0,590	$u_{d,l,z}$	0,34	0,12
12	Long term drift at span level	≤ 5.0% of max. of certification range	1,190	$u_{d,l,lh}$	0,82	0,68
18	Difference sample/calibration port	≤ 1.0%	-0,350	$u_{\Delta sc}$	-0,42	0,18
21	Uncertainty of test gas	≤ 3.0%	2,000	u_{cg}	1,20	1,44

Combined standard uncertainty	u_c	5,81	nmol/mol
Expanded uncertainty	U	11,61	nmol/mol
Relative expanded uncertainty	W	9,68	%
Maximum allowed expanded uncertainty	W_{req}	15	%

Combined uncertainty, laboratory and field (EN 14625:2024), system 2

Measuring device:	O342e / O342e*				Serial-No.:	SN 14 / 24 / 1735	
Measured component:	O_3				1h-alert threshold:	120	nmol/mol

No.	Performance characteristic	Performance criterion	Result	Partial uncertainty		Square of partial uncertainty
1	Repeatability standard deviation at zero	≤ 1.0 nmol/mol	0,020	$u_{r,z}$	0,00	0,00
2	Repeatability standard deviation at 1h-alert threshold	≤ 3.0 nmol/mol	0,090	$u_{r,lh}$	not considered, as ur,lh = 0,01 < ur,f	-
3	"lack of fit" at 1h-alert threshold	≤ 4.0% of measured value	2,370	$u_{l,lh}$	1,64	2,70
4	Sensitivity coefficient of sample gas pressure at 1h-alert threshold	≤ 2.0 nmol/mol/kPa	0,210	u_{gp}	1,56	2,45
5	Sensitivity coefficient of sample gas temperature at 1h-alert threshold	≤ 1.0 nmol/mol/K	0,040	u_{gt}	0,52	0,27
6	Sensitivity coefficient of surrounding temperature at 1h-alert threshold	≤ 1.0 nmol/mol/K	0,049	u_{st}	0,64	0,41
7	Sensitivity coefficient of electrical voltage at 1h-alert threshold	≤ 0.30 nmol/mol/V	0,020	u_V	0,26	0,07
8a	Interferent H_2O with 21 mmol/mol	≤ 10 nmol/mol (Zero)	0,530	u_{H2O}	-2,01	4,06
		≤ 10 nmol/mol (Span)	-2,700			
8b	Interferent Toluene with 0,5 µmol/mol	≤ 5.0 nmol/mol (Zero)	0,930	$u_{int,pos}$	0,75	0,56
		≤ 5.0 nmol/mol (Span)	0,400	or		
8c	Interferent Xylene with 0,5 µmol/mol	≤ 5.0 nmol/mol (Zero)	1,100			
		≤ 5.0 nmol/mol (Span)	0,900	$u_{int,\ neg}$		
9	Averaging effect	≤ 7.0% of measured value	-4,770	u_{av}	-3,30	10,92
10	Reproducibility standard deviation under field conditions	≤ 5.0% of average over 3 months	2,590	$u_{r,f}$	3,11	9,66
11	Long term drift at zero level	≤ 5.0 nmol/mol	0,810	$u_{d,l,z}$	0,47	0,22
12	Long term drift at span level	≤ 5.0% of max. of certification range	1,450	$u_{d,l,lh}$	1,00	1,01
18	Difference sample/calibration port	≤ 1.0%	-0,360	$u_{\Delta sc}$	-0,43	0,19
21	Uncertainty of test gas	≤ 3.0%	2,000	u_{cg}	1,20	1,44

Combined standard uncertainty	u_c	5,83	nmol/mol
Expanded uncertainty	U	11,65	nmol/mol
Relative expanded uncertainty	W	9,71	%
Maximum allowed expanded uncertainty	W_{req}	15	%