

CERTIFICATE

of Product Conformity (QAL1)

Certificate No.: 0000040202_02

AMS designation: Serinus 10 for O₃

Manufacturer: Ecotech Pty Ltd.
1492 Ferntree Gully Road
Knoxfield, VIC, 3180
Australia

Test Laboratory: TÜV Rheinland Energy GmbH

**This is to certify that the AMS has been tested
and found to comply with:
VDI 4202-1 (2010), EN 14625 (2012),
EN 15267-1 (2009) and EN 15267-2 (2009)**

Certification is awarded in respect of the conditions stated in this certificate
(this certificate contains 13 pages).
The present certificate replaces certificate 0000040202_01 of 01 April 2019.



Suitability Tested
Equivalent to
2008/50/EC
EN 15267
Regular Surveillance
www.tuv.com
ID 0000040202

Publication in the German Federal Gazette
(BAnz) of 01 April 2014

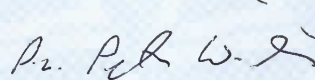
This certificate will expire on:
30 June 2025

German Federal Environment Agency
Dessau, 01 July 2020

TÜV Rheinland Energy GmbH
Cologne, 30 June 2020



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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 certificate D-PL-11120-02-00.

| | |
|-------------------------------|--|
| Test Report: | 936/21221977/C dated 08 October 2013 |
| Initial certification: | 01 April 2014 |
| Expiry date: | 30 June 2025 |
| Certificate: | Renewal (of previous certificate 0000040202_01 dated 01 April 2019 valid until 30 June 2020) |
| Publication: | BAnz AT 01.04.2014 B12, chapter IV number 1.1 |

Approved application

The certified AMS is suitable for continuous ambient air monitoring of ozone (stationary operation).

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

The AMS is approved for an ambient temperature range of 0 °C to +30 °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, in consultation with the manufacturer, that this AMS is suitable for monitoring the AMS readings relevant to the application.

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

Basis of the certification

This certification is based on:

- Test report no. 936/21221977/C dated 08 October 2013 issued by TÜV Rheinland Energie und Umwelt 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 01.04.2014 B12, chapter IV number 1.1, UBA announcement dated 27 February 2014:

AMS designation:

Serinus 10 for Ozone

Manufacturer:

Ecotech Pty Ltd., Knoxfield, Australia

Field of application:

For continuous ambient air monitoring of ozone (stationary operation)

Measuring range during performance testing:

| Component | Certification range | Unit |
|-----------|---------------------|-------------------|
| Ozone | 0 - 500 | µg/m ³ |

Software version:

Firmware: 2.09.0005

Restrictions:

None

Notes:

1. The measuring system must be operated inside a lockable measuring cabinet or measurement container.
2. The test report on performance testing is available on the internet at www.qal1.de.

Test Laboratory:

TÜV Rheinland Energie und Umwelt GmbH, Cologne
Report no.: 936/21221977/C dated 08 October 2013

Publication in the German Federal Gazette: BAnz AT 02.04.2015 B5, chapter IV notification 4, UBA announcement dated 25 February 2015:

4 Notification as regards Federal Environment Agency (UBA) notice of 27 February 2014 (BAnz AT 01.04.2014 B12, chapter IV number 1.1)

The Serinus 10 measuring system for O₃ manufactured by Ecotech Pty Ltd. will be equipped with a new micro processor board (C010014) in the future. This entails changes to the power supply and the software.

The following software versions apply:

2.20.0009 for instruments with the previous processor board (C010001)

3.10.001 for instruments with the new processor board (C010014)

Statement issued by TÜV Rheinland Energie und Umwelt GmbH dated 12 September 2014

Publication in the German Federal Gazette: BAnz AT 15.03.2017 B6, chapter V notification 5, UBA announcement dated 22 February 2017:

5 Notification as regards Federal Environment Agency (UBA) notices of 27 February 2014 (BAnz AT 01.04.2014 B12, chapter IV number 1.1) and of 25 February 2015 (BAnz AT 02.04.2015 B5, chapter IV 4th notification)

The latest software version of the Serinus 10 measuring system for O₃ with microprocessor C010001 manufactured by Ecotech Pty Ltd. is: V 2.31.0004.

Moreover, the following software version are approved for this instrument version: V 2.21.0000, V 2.22.0000, V 2.23.0000, V 2.24.0000, V 2.25.0004, V 2.26.0000, V 2.27.0000, V 2.28.0000, V 2.29.0003 und V 2.30.0000.

The latest software version of the Serinus 10 measuring system for O₃ with microprocessor C010014 manufactured by Ecotech Pty Ltd. is: V 3.48.011.

Moreover, the following software version are approved for this instrument version: V 3.13.000, V 3.14.001, V 3.15.010, V 3.16.001, V 3.18.003, V 3.20.000, V 3.22.000, V 3.23.015, V 3.24.000, V 3.26.000, V 3.27.000, V 3.28.000, V 3.29.013, V 3.30.005, V 3.31.002, V 3.32.003, V 3.33.004, V 3.34.000, V 3.35.004, V 3.36.000, V 3.37.004, V 3.38.006, V 3.39.000, V 3.40.001, V 3.41.004, V 3.42.000, V 3.43.000, V 3.44.004, V 3.45.011, V 3.46.002, V 3.47.006.

Statement issued by TÜV Rheinland Energy GmbH dated 13 October 2016

Publication in the German Federal Gazette: BAnz AT 26.03.2019 B7, chapter IV
notification 15, UBA announcement dated 27 February 2019:

**15 Notification as regards Federal Environment Agency (UBA) notices
of 27 February 2014 (BAnz AT 01.04.2014 B12, chapter IV number 1.1) and
of 22 February 2017 (BAnz AT 15.03.2017 B6, chapter IV 5th notification)**

The latest software version of the Serinus 10 measuring system for O₃ with mi-
croprocessor C010001 manufactured by Ecotech Pty Ltd. is:
V 2.35.0001.

Moreover, the following software version are approved for this instrument ver-
sion:
V 2.32.0000, V 2.33.0000, V 2.34.0000

The latest software version of the Serinus 10 measuring system for O₃ with mi-
croprocessor C010014 manufactured by Ecotech Pty Ltd. is:
V 3.74.0003.

Moreover, the following software version are approved for this instrument ver-
sion:
V 3.49.0000, V 3.51.0011, V 3.52.0000, V 3.53.0012, V 3.54.0000,
V 3.55.0000, V 3.56.0001, V 3.57.0002, V 3.58.0000, V 3.59.0004,
V 3.60.0005, V 3.61.0000, V 3.62.0000, V 3.63.0001, V 3.64.0000,
V 3.65.0001, V 3.66.0000, V 3.67.0003, V 3.68.0009, V 3.69.0001,
V 3.70.0000, V 3.71.0000

The instrument's display shows the software version in the following format:
2.XX or 3.XX.

Statement issued by TÜV Rheinland Energy GmbH dated 10 October 2018

Publication in the German Federal Gazette: BAnz AT 24.03.2020 B7, chapter IV
notification 19, UBA announcement dated 24 February 2020:

**19 Notification as regards Federal Environment Agency (UBA) notices
of 27 February 2014 (BAnz AT 01.04.2014 B12, chapter IV number 1.1) and
of 27 February 2019 (BAnz AT 26.03.2019 B7, chapter IV 15th notification)**

The latest software version of the Serinus 10 measuring system for O₃ with mi-
croprocessor C010001 manufactured by Ecotech Pty Ltd. remains:
V 2.35.0001.

The latest software version of the Serinus 10 measuring system for O₃ with mi-
croprocessor C010014 manufactured by Ecotech Pty Ltd. is:
V 3.87.0000.

Moreover, the following software version are approved for this instrument ver-
sion:

V 3.75.0003, V 3.76.0004, V 3.77.0009, V 3.78.0000, V 3.79.0001,
V 3.81.0000, V 3.83.0000, V 3.84.0000, V 3.85.0001, V 3.86.0000.

The instrument's display shows the software version in the following format:
2.XX or 3.XX.

Statement issued by TÜV Rheinland Energy GmbH dated 20 September 2019

Certified product

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

The Serinus 10 measuring system is a continuous ozone monitor which uses the method of ultraviolet photometry. The instrument is designed for the continuous measurement of ozone concentrations in ambient air.

The UV photometer determines the ozone concentration (O_3) in the sample gas at ambient pressure by detecting absorption of UV radiation in a glass absorption tube. The Serinus 10 works by the following principles and measurement methods:

- Ozone shows a strong absorption of UV light at a wavelength of 254 nm.
- Sample air is passed into the glass absorption tube (measurement cell).
- Within the measurement cell a single beam of UV radiation (from a mercury vapour lamp) passes through the sample and is absorbed by the O_3 .
- The solar blind vacuum photodiode detects any UV that is not absorbed.
- The strength of the UV signal being detected is proportional to the amount of UV light being absorbed by O_3 .
- The Serinus 10 analyser uses the Beer-Lambert relationship to calculate the ozone concentration.

The Beer-Lambert law (shown below) is used to calculate the concentration of ozone from the ratio of the two light intensities measured:

$$I/I_0 = \exp(-acd)$$

Where:

- I is the light intensity measured with ozone in the gas sample
 - I_0 is the light intensity measured with no ozone in the gas sample
 - a is the ozone absorption coefficient at 253.7 nm ($1.44 \times 10^{-5} \text{ m}^2/\text{mg}$)
 - c is the mass concentration of ozone in mg/m^3
 - d is the optical path length in m
- O_3 is not the only gas that absorbs UV (254 nm), SO_2 and aromatic compounds also absorb radiation at this wavelength. To eliminate interferences a second cycle is performed. Sample air is passed through an ozone scrubber, removing ozone but allowing all interfering gases through. It is thus possible to accurately measure the effect of interfering gases. This effect is then removed from the sample measurement signal which ensures accurate measurement of ozone without the influence of interferents.

The microprocessor and electronics of the Serinus 10 measuring system control, measure and correct for all the major external variables to ensure stable and reliable operation.

The Serinus 10 Ozone Analyser uses non-dispersive ultraviolet (UV) absorption technology to measure ozone to a sensitivity of 0.5 ppb in the range of 0–20 ppm. The Serinus 10 measures O_3 with the following components and techniques:

- Mercury vapour lamp – to provide detector input.
(254 nm UV light source)
- Photodiode detector – to capture the measurement response.
Detects the ratio of transmitted light, thereby giving the concentration of ozone.

- Ozone scrubber – to establish the background response
As ozone is not the only atmospheric gas that absorbs the particular wavelength of UV light.
- A microprocessor programmed with Serinus firmware monitors the detector response and many other parameters, so that the O₃ concentration is automatically corrected for gas temperature and pressure changes and referenced to 0 °C, 20 °C or 25 °C at 1 atmosphere.

The major components of the Serinus 10 are described below:

Particle filter:

The particulate filter is a Teflon 5 micron (µm) filter with a diameter of 47 mm. This filter eliminates all particles larger than 5 µm that could interfere with sample measurements.

Sample gas pump

Manufacturer: Thomas, Type: 617CD22-194 C

During performance testing, the sample gas pump mentioned above was used for the laboratory as well as in the field test. As far as the models Serinus 10 (ozone), Serinus 30 (CO) and Serinus 50 (SO₂) are concerned, one pump can be operated with up to two analysers. However, operation of the Serinus 40 (NO_x) requires one sample gas pump per analyser.

General remarks

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 manufacturing process for 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 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 document as well as the certification mark remains property of TÜV Rheinland Energy GmbH. Upon revocation of the publication the certificate loses its validity. After the expiration of the certificate and on request of TÜV Rheinland Energy GmbH this document shall be returned and the certificate mark must no longer be used.

The relevant version of this certificate and its expiration date are also accessible on the internet at qal1.de.

Document history

Certification of the Serinus 10 measuring system is based on the documents listed below and the regular, continuous surveillance of the manufacturer's quality management system:

Initial certification according to EN 15267

Certificate no. 0000040202: 29 April 2014
Expiry date of the certificate: 31 March 2019
Test report no. 936/21221977/C dated 08 October 2013
TÜV Rheinland Energie und Umwelt GmbH, Cologne
Publication: BAnz AT 01.04.2014 B12, chapter IV number 1.1
UBA announcement dated 27 February 2014

Notifications in accordance with EN 15267

Statement issued by TÜV Rheinland Energie und Umwelt GmbH dated 12 September 2014
Publication: BAnz AT 02.04.2015 B5, chapter IV notification 4
UBA announcement dated 25 February 2015
(new software version, new microprocessor board)

Statement issued by TÜV Rheinland Energy GmbH dated 13 October 2016
Publication: BAnz AT 15.03.2017 B6, chapter V notification 5
UBA announcement dated 22 February 2017
(New software version)

Statement issued by TÜV Rheinland Energy GmbH dated 10 October 2018
Publication: BAnz AT 26.03.2019 B7, chapter IV notification 15
UBA announcement dated 27 February 2019
(New software version)

Renewal of the certificate

Certificate no. 0000040202_01: 01 April 2019
Expiry date of the certificate: 30 June 2020

Notifications in accordance with EN 15267

Statement issued by TÜV Rheinland Energie und Umwelt GmbH dated 20 September 2019
Publication: BAnz AT 24.03.2020 B7, chapter IV notification 19
UBA announcement dated 24 February 2020
(New software version)

Renewal of the certificate

Certificate no. 0000040202_02: 01 July 2020
Expiry date of the certificate: 30 June 2025

Expanded uncertainty laboratory, system 1

| Measuring device: Ecotech Seninus 10 | | Serial-No.: 13-0091 (Device 1) | | nmol/mol | |
|--------------------------------------|--|--|--------------------------------------|----------------------------|-------------------------------|
| Measured component: O ₃ | | 1h-alert threshold: 120 | | | |
| No. | Performance characteristic | Performance criterion | Result | Partial uncertainty | Square of partial uncertainty |
| 1 | Repeatability standard deviation at zero | ≤ 1.0 nmol/mol | 0.320 | u _{r,z} | 0.0055 |
| 2 | Repeatability standard deviation at 1h-alert threshold | ≤ 3.0 nmol/mol | 0.160 | u _{r,h} | 0.0014 |
| 3 | "lack of fit" at 1h-alert threshold | ≤ 4.0% of measured value | 1.380 | u _{l,h} | 0.9141 |
| 4 | Sensitivity coefficient of sample gas pressure at 1h-alert threshold | ≤ 2.0 nmol/mol/kPa | 0.060 | u _{gp} | 0.3811 |
| 5 | Sensitivity coefficient of sample gas temperature at 1h-alert threshold | ≤ 1.0 nmol/mol/K | 0.130 | u _{gt} | 2.2089 |
| 6 | Sensitivity coefficient of surrounding temperature at 1h-alert threshold | ≤ 1.0 nmol/mol/K | 0.421 | u _{st} | 9.9431 |
| 7 | Sensitivity coefficient of electrical voltage at 1h-alert threshold | ≤ 0.30 nmol/mol/V | 0.010 | u _v | 0.0152 |
| 8a | Interferent H ₂ O with 21 mmol/mol | ≤ 10 nmol/mol (Zero) ≤ 10 nmol/mol (Span) | 2.700 -0.670 | u _{H2O} | 0.1595 |
| 8b | Interferent Toluene with 0.5 µmol/mol | ≤ 5.0 nmol/mol (Zero) ≤ 5.0 nmol/mol (Span) | 1.880 0.380 | u _{int,pos} or | 8.0082 |
| 8c | Interferent Xylene with 0.5 µmol/mol | ≤ 5.0 nmol/mol (Zero) ≤ 5.0 nmol/mol (Span) | 2.510 4.530 | u _{int,neg} | |
| 9 | Averaging effect | ≤ 7.0% of measured value | -1.570 | u _{av} | 1.1832 |
| 18 | Difference sample/calibration port | ≤ 1.0% | -0.370 | u _{sc} | 0.1971 |
| 21 | Uncertainty of test gas | ≤ 3.0% | 2.000 | u _{tg} | 1.4400 |
| | | | Combined standard uncertainty | | u _c |
| | | | Expanded uncertainty | | U |
| | | | Relative expanded uncertainty | | W |
| | | | Maximum allowed expanded uncertainty | | W _{req} |
| | | | | | nmol/mol |
| | | | | | nmol/mol |
| | | | | | % |
| | | | | | % |

Expanded uncertainty laboratory, system 2

| Measuring device: Ecotech Serinus 10 | | Serial-No.: 13-0090 (Device 2) | | | |
|--------------------------------------|--|--|------------------|----------------------------|-------------------------------|
| 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 | 0.600 | u _{r,z} | 0.0188 |
| 2 | Repeatability standard deviation at 1h-alert threshold | ≤ 3.0 nmol/mol | 0.400 | u _{r,lv} | 0.0086 |
| 3 | "lack of fit" at 1h-alert threshold | ≤ 4.0% of measured value | 1.160 | u _{lv} | 0.6459 |
| 4 | Sensitivity coefficient of sample gas pressure at 1h-alert threshold | ≤ 2.0 nmol/mol/kPa | 0.040 | u _{gp} | 0.1694 |
| 5 | Sensitivity coefficient of sample gas temperature at 1h-alert threshold | ≤ 1.0 nmol/mol/K | 0.140 | u _{gt} | 2.5931 |
| 6 | Sensitivity coefficient of surrounding temperature at 1h-alert threshold | ≤ 1.0 nmol/mol/K | 0.206 | u _{st} | 2.5147 |
| 7 | Sensitivity coefficient of electrical voltage at 1h-alert threshold | ≤ 0.30 nmol/mol/V | 0.020 | u _v | 0.0606 |
| 8a | Interferent H ₂ O with 21 mmol/mol | ≤ 10 nmol/mol (Zero) ≤ 10 nmol/mol (Span) | -0.010 0.720 | u _{H2O} | 0.53 0.2791 |
| 8b | Interferent Toluene with 0,5 µmol/mol | ≤ 5.0 nmol/mol (Zero) ≤ 5.0 nmol/mol (Span) | 2.020 0.820 | u _{int,pos} or | 7.3008 |
| 8c | Interferent Xylene with 0,5 µmol/mol | ≤ 5.0 nmol/mol (Zero) ≤ 5.0 nmol/mol (Span) | 2.680 3.860 | u _{int,neg} | |
| 9 | Averaging effect | ≤ 7.0% of measured value | -0.540 | u _{av} | -0.37 0.1400 |
| 18 | Difference sample/calibration port | ≤ 1.0% | 0.220 | u _{psc} | 0.26 0.0697 |
| 21 | Uncertainty of test gas | ≤ 3.0% | 2.000 | u _{cg} | 1.20 1.4400 |
| Combined standard uncertainty | | | u _c | nmol/mol | |
| Expanded uncertainty | | | U | nmol/mol | |
| Relative expanded uncertainty | | | W | % | |
| Maximum allowed expanded uncertainty | | | W _{req} | % | |

Combined uncertainty, laboratory and field, system 1

| Measuring device: | | Ecotech Serinus 10 | | Serial-No.: | | 13-0091 (Device 1) | |
|---------------------|--|--|-----------------|--------------------------------------|---|--------------------|---------|
| 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 | 0.320 | u _{r,z} | 0.07 | 0.0055 | |
| 2 | Repeatability standard deviation at 1h-alert threshold | ≤ 3.0 nmol/mol | 0.160 | u _{r,1h} | not considered, as u _{r,1h} = 0.03 < u _{r,f} | - | |
| 3 | "lack of fit" at 1h-alert threshold | ≤ 4.0% of measured value | 1.380 | u _{l,1h} | 0.96 | 0.9141 | |
| 4 | Sensitivity coefficient of sample gas pressure at 1h-alert threshold | ≤ 2.0 nmol/mol/kPa | 0.060 | u _{sp} | 0.62 | 0.3811 | |
| 5 | Sensitivity coefficient of sample gas temperature at 1h-alert threshold | ≤ 1.0 nmol/mol/K | 0.130 | u _{gt} | 1.49 | 2.2089 | |
| 6 | Sensitivity coefficient of surrounding temperature at 1h-alert threshold | ≤ 1.0 nmol/mol/K | 0.421 | u _{st} | 3.15 | 9.9431 | |
| 7 | Sensitivity coefficient of electrical voltage at 1h-alert threshold | ≤ 0.30 nmol/mol/V | 0.010 | u _v | 0.12 | 0.0152 | |
| 8a | Interferent H ₂ O with 21 mmol/mol | ≤ 10 nmol/mol (Zero) ≤ 10 nmol/mol (Span) | 2.700 -0.670 | u _{H2O} | -0.40 | 0.1595 | |
| 8b | Interferent Toluene with 0.5 µmol/mol | ≤ 5.0 nmol/mol (Zero) ≤ 5.0 nmol/mol (Span) | 1.880 0.380 | u _{int,pos} or | 2.63 | 8.0082 | |
| 8c | Interferent Xylene with 0.5 µmol/mol | ≤ 5.0 nmol/mol (Zero) ≤ 5.0 nmol/mol (Span) | 2.510 4.530 | u _{int,neg} | | | |
| 9 | Averaging effect | ≤ 7.0% of measured value | -1.570 | u _{av} | -1.09 | 1.1832 | |
| 10 | Reproducibility standard deviation under field conditions | ≤ 5.0% of average over 3 months | 1.950 | u _{r,f} | 2.34 | 5.4756 | |
| 11 | Long term drift at zero level | ≤ 5.0 nmol/mol | 1.810 | u _{d,l,z} | 1.05 | 1.0920 | |
| 12 | Long term drift at span level | ≤ 5.0% of max. of certification range | -2.250 | u _{d,l,1h} | -1.56 | 2.4300 | |
| 18 | Difference sample/calibration port | ≤ 1.0% | -0.370 | u _{ssc} | -0.44 | 0.1971 | |
| 21 | Uncertainty of test gas | ≤ 3.0% | 2.000 | u _{sg} | 1.20 | 1.4400 | |
| | | | | Combined standard uncertainty | | u _c | 5.7839 |
| | | | | Expanded uncertainty | | U | 11.5678 |
| | | | | Relative expanded uncertainty | | W | 9.64 |
| | | | | Maximum allowed expanded uncertainty | | W _{req} | 15 |

Combined uncertainty, laboratory and field, system 2

| Measuring device: Ecotech Serrinus 10 | | Serial-No.: 13-0090 (Device 2) | | 120 | | nmol/mol | |
|---------------------------------------|--|---------------------------------------|--------|----------------------|--|----------|----------|
| Measured component: O ₃ | | 1h-alert threshold: | | 1h-alert threshold: | | 120 | |
| No. | Performance characteristic | Performance criterion | Result | Partial uncertainty | Square of partial uncertainty | | |
| 1 | Repeatability standard deviation at zero | ≤ 1.0 nmol/mol | 0.600 | u _{r,z} | 0.14 | 0.0188 | |
| 2 | Repeatability standard deviation at 1h-alert threshold | ≤ 3.0 nmol/mol | 0.400 | u _{r,th} | not considered, as u _{r,th} = 0.09 < u _{r,f} | - | |
| 3 | "lack of fit" at 1h-alert threshold | ≤ 4.0% of measured value | 1.160 | u _{r,th} | 0.80 | 0.6459 | |
| 4 | Sensitivity coefficient of sample gas pressure at 1h-alert threshold | ≤ 2.0 nmol/mol/kPa | 0.040 | u _{gp} | 0.41 | 0.1694 | |
| 5 | Sensitivity coefficient of sample gas temperature at 1h-alert threshold | ≤ 1.0 nmol/mol/K | 0.140 | u _{gt} | 1.61 | 2.5931 | |
| 6 | Sensitivity coefficient of surrounding temperature at 1h-alert threshold | ≤ 1.0 nmol/mol/K | 0.206 | u _{st} | 1.59 | 2.5147 | |
| 7 | Sensitivity coefficient of electrical voltage at 1h-alert threshold | ≤ 0.30 nmol/mol/V | 0.020 | u _v | 0.25 | 0.0606 | |
| 8a | Interferent H ₂ O with 21 nmol/mol | ≤ 10 nmol/mol (Zero) | -0.010 | u _{H2O} | 0.53 | 0.2791 | |
| | | ≤ 10 nmol/mol (Span) | 0.720 | | | | |
| 8b | Interferent Toluene with 0.5 μmol/mol | ≤ 5.0 nmol/mol (Zero) | 2.020 | u _{int,pos} | | | |
| | | ≤ 5.0 nmol/mol (Span) | 0.820 | or | 2.70 | 7.3008 | |
| 8c | Interferent Xylene with 0.5 μmol/mol | ≤ 5.0 nmol/mol (Zero) | 2.680 | u _{int,neg} | | | |
| | | ≤ 5.0 nmol/mol (Span) | 3.860 | | | | |
| 9 | Averaging effect | ≤ 7.0% of measured value | -0.540 | u _{av} | -0.37 | 0.1400 | |
| 10 | Reproducibility standard deviation under field conditions | ≤ 5.0% of average over 3 months | 1.950 | u _{r,f} | 2.34 | 5.4756 | |
| 11 | Long term drift at zero level | ≤ 5.0 nmol/mol | 1.470 | u _{d,l,z} | 0.85 | 0.7203 | |
| 12 | Long term drift at span level | ≤ 5.0% of max. of certification range | -2.440 | u _{d,l,th} | -1.69 | 2.8577 | |
| 18 | Difference sample/calibration port | ≤ 1.0% | 0.220 | u _{asc} | 0.26 | 0.0697 | |
| 21 | Uncertainty of test gas | ≤ 3.0% | 2.000 | u _{sg} | 1.20 | 1.4400 | |
| Combined standard uncertainty | | | | u _c | | 4.9281 | nmol/mol |
| Expanded uncertainty | | | | U | | 9.8561 | nmol/mol |
| Relative expanded uncertainty | | | | W | | 8.21 | % |
| Maximum allowed expanded uncertainty | | | | W _{res} | | 15 | % |