CERTIFICATE

of Product Conformity (QAL1)

Certificate No.: 0000028755_05

Certified AMS:	APNA 370 for NO, NO_2 and NO_x
Manufacturer:	Horiba Ltd. 2 Miyanohigashi Kisshoin Minami-ku / Kyoto 610-8510 Japan
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 (2010), VDI 4203-3 (2010), EN 14211 (2012), 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 15 pages).
The present certificate replaces certificate 0000028755_04 dated 25 January 2021.

TÜVRheinland® CERTIFIED
Suitability Tested
Complying with 2008/50/EC
EN 15267
Regular Surveillance
www.tuv.com
ID 0000028755

Publication in the German Federal Gazette (BAnz) of 14 October 2006

German Environment Agency

Dessau, 26 January 2026

This certificate will expire on:
25 January 2031

TÜV Rheinland
Energy & Environment GmbH
Cologne, 25 January 2026

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

Test report:	936/21204643/C dated 7 July 2006
Initial certification:	26 January 2011
Expiry date:	25 January 2031
Certificate:	Renewal (of previous certificate 0000028755_04 of 25 January 2021 valid until 25 January 2026)
Publication:	BAnz. 14 October 2006, No. 194, p. 6715, chapter IV No. 3.1

Approved application

The tested AMS is suitable for continuous immission measurement of NO, NO_2 and NO_x in stationary use.

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

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 936/21204643/C dated 7 July 2006 of TÜV Immissionsschutz und Energiesysteme GmbH
- Addenda 936/21204643/C1 dated 27 July 2011 and 936/21222689/C dated 5 October 2013
- 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. 14 October 2006, No. 194, p. 6715, chapter IV No. 3.1, Announcement by UBA dated 12 September 2006:

AMS designation:
APNA 370

Manufacturer:
HORIBA, Ltd., Kyoto, Japan
Distribution: HORIBA Europe GmbH, Leichlingen

Field of application:
For continuous monitoring of NO, NO_2 und NO_X in ambient air (stationary operation)

Measuring ranges during the performance test:

Component	Measurement ranges	Unit
NO_2	0 - 400	µg/m³
NO_2	0 - 500	µg/m³
NO	0 - 1,200	µg/m³

Software version:
P1000878001C

Test institute:
TÜV Immissionsschutz und Energiesysteme GmbH, Cologne
TÜV Rheinland Group
Report No.: 936/21204643/C dated 7 July 2006

Publication in the German Federal Gazette: BAnz. 25. August 2009, Nr. 125, S. 2929, Chap. III notification 2, Announcement by UBA dated 3 August 2009:

2 Notification as regards Federal Environment Agency notice of 12 September 2006 (BAnz. p. 6717)

The latest software version of the APNA 370 ambient air measuring system manufactured by Horiba Europe GmbH is:
P10000878001J

The type GD-6 EH sample gas pump manufactured by Horiba may be used instead of the N 86.0 KNE sample gas pump manufactured by KNF.

Statement issued by TÜV Rheinland Immissionsschutz und Energiesysteme GmbH dated 31 March 2009

Publication in the German Federal Gazette: BAnz. 26. Januar 2011, Nr. 14, S. 294, Chap. IV notification 6, Announcement by UBA dated 10 January 2011:

6 Notification as regards Federal Environment Agency (UBA) notices of 12 September 2006 (BAnz. p. 6715, chapter IV number 3.1) and of 3 August 2009 (BAnz. p. 2929, chapter III notification 2)

The APNA 370 measuring system for NO, NO_2 and NO_x manufactured by Horiba Ltd, Japan, and Horiba Europe GmbH meets the requirements defined in standard EN 14211. Furthermore, the manufacturing process and the quality management for the APNA 370 measuring system for NO, NO_2 and NOX meet the requirements of EN 15267.
The test report on performance testing is available on the internet at www.qal1.de.

Statement of TÜV Rheinland Energie und Umwelt GmbH dated 6 October 2010

Publication in the German Federal Gazette: BAnz. 02. März 2012, Nr. 36, S. 920, Chap. V notification 17, Announcement by UBA dated 23 February 2012:

17 Notification as regards Federal Environment Agency (UBA) notices of 12 September 2006 (p. 6715, chapter IV number 3.1) and of 10 January 2011 (BAnz. p. 294, chapter IV notification 6)

There is an addendum to test report No. 936/21204643/C for the APNA 370 measuring system for NO, NO_2 and NO_x manufactured by Horiba, Ltd., Japan and Horiba Europe GmbH. The addendum is assigned report No. 936/21204643/C1 and after its publication is an integral part of the test report No. 936/21204643/C and is also available online at www.qal1.de.

Statement of TÜV Rheinland Energie und Umwelt GmbH dated 3 November 2011

Publication in the German Federal Gazette: BAnz AT 05.03.2013 B10, Chap. V notification 8, Announcement by UBA dated 12 February 2013:

8 Notification as regards Federal Environment Agency (UBA) notices of 12 September 2006 (p. 6715, chapter IV number 3.1) and of 23 February 2012 (BAnz. p. 920, chapter V notification 17)

The APNA 370 measuring system NO, NO_2 and NO_x manufactured by Horiba Ltd, Japan, and Horiba Europe GmbH may optionally be equipped with an additional calibration port. Calibration gas may be fed upstream or downstream of the sample gas filter using a three-way valve.

Statement of TÜV Rheinland Energie und Umwelt GmbH dated 11 October 2012

Publication in the German Federal Gazette: BAnz AT 01.04.2014 B12, Chap. VI notification 27, Announcement by UBA dated 27 February 2014:

27 Notification as regards Federal Environment Agency (UBA) notices of 12 September 2006 (p. 6715, chapter IV number 3.1) and of 12 February 2013 (BAnz AT 05.03.2013 B10, chapter V notification 8)

The APNA 370 measuring system for NO, NO_2 and NO_x manufactured by Horiba Ltd, Japan, and Horiba Europe GmbH meets the requirements defined in standard EN 14211 (November 2012 version).
An addendum as integral part of test report No. 936/21222689/C is available online at www.qal1.de.

Statement of TÜV Rheinland Energie und Umwelt GmbH dated 5 October 2013

Publication in the German Federal Gazette: BAnz AT 01.08.2016 B11, Chap. V notification 31, Announcement by UBA dated 14 July 2016:

31 Notification as regards Federal Environment Agency (UBA) notices of 12 September 2006 (BAnz. p. 6715, chapter IV number 3.1) and of 27 February 2014 (BAnz AT 01.04.2014 B12, chapter VI notification 27)

The APNA-370 measuring system for NO, NO_2 and NOX manufactured by HORIBA Ltd. is equipped with a new display which, in design and functionality, largely corresponds to its predecessor. In addition, the power supply ZWS-BAF may also be used.
The current software version of the measuring system is:
P1000878001K

Statement ofTÜV Rheinland Energie und Umwelt GmbH dated 29 February 2016.

Publication in the German Federal Gazette: BAnz AT 22.07.2019 B8, Chap. V notification 10,

Announcement by UBA dated 28 June 2019:

10 Notification as regards Federal Environment Agency (UBA) notices of 12 September 2006 (BAnz. p. 6715, chapter IV number 3.1) and of 14 July 2016 (BAnz AT 01.08.2016 B11, chapter V notification 31)

The latest software version of the APNA-370 measuring system for NO, NO_2 and NO_x is:
P1000878001L

The rear of the housing was modified to cater for additional cable connections.

Statement issued by TÜV Rheinland Energy GmbH dated 5 March 2019

Publication in the German Federal Gazette: BAnz AT 24.03.2020 B7, Chap. IV notification 54, Announcement by UBA dated 24 February 2020:

54 Notification as regards Federal Environment Agency (UBA) notices of 12 September 2006 (p. 6715, chapter IV number 3.1) and of 28 June 2019 (BAnz AT 22.07.2019 B8, chapter V notification 10)

The latest software version of the APNA-370 measuring system for NO, NO_2 and NO_x manufactured by HORIBA Ltd. is:
P1000878001M

Statement issued by TÜV Rheinland Energy GmbH dated 20 September 2019

Publication in the German Federal Gazette: BAnz AT 31.07.2020 B10, Chap. II notification 11, Announcement by UBA dated 27 May 2020:

11 Notification as regards Federal Environment Agency (UBA) notices of 12 September 2006 (BAnz. p. 6715, chapter IV number 3.1) and of 24 February 2020 (BAnz AT 24.03.2020 B7, chapter IV, notification 54)

The APNA-370 measuring system for NO, NO_2 and NOX manufactured by HORIBA Ltd. can be equipped with a type KPMW-MT/TC102 heating element for regeneration of the silica gel dryer for the ozone generator in the future.
Furthermore, FINEFLEX BIOTM Board TOMBO No. 5625 may be used as material for thermal insulation.

Statement issued by TÜV Rheinland Energy GmbH dated 10 March 2020

Publication in the German Federal Gazette: BAnz AT 03.05.2021 B9, Chap. III notification 36, Announcement by UBA dated 31 March 2021:

36 Notification as regards Federal Environment Agency (UBA) notices of 12 September 2006 (BAnz. p. 6715, chapter IV number 3.1) and of 27 May 2020 (BAnz AT 31.07.2020 B10, chapter II notification 11)

The latest software version of the APNA-370 measuring system for NO, NO_2 and NO_X manufactured by HORIBA Ltd. is:
P1000878001N.

Statement issued by TÜV Rheinland Energy GmbH dated 08 September 2020

Publication in the German Federal Gazette: BAnz AT 20.03.2023 B6, Chap. IV notification 72, Announcement by UBA dated 21 February 2023:

72 Notification as regards Federal Environment Agency (UBA) notices of 12 September 2006 (BAnz. p. 6715, chapter IV number 3.1) and of 31 March 2021 (BAnz AT 03.05.2021 B9, chapter III notification 36)

The current software version of the APNA-370 measuring system for NO, NO_2 and NO_x from the company HORIBA Ltd. is:
P1000878001P
The measuring system can also be equipped with an LCD display type TL-0267L2 from the manufacturer AUO.

Statement issued by TÜV Rheinland Energy GmbH dated 13 September 2022

Publication in the German Federal Gazette: BAnz AT 19.05.2025 B3, Chap. IV notification 78, Announcement by UBA dated 2 April 2025:

78 Notification as regards Federal Environment Agency (UBA) notices of 12 September 2006 (BAnz. p. 6715, chapter IV number 3.1) and of 21 February 2023 (BAnz AT 20.03.2023 B6, chapter IV notification 72)

The current software version of the APNA-370 measuring system for NO, NO_2 and NO_x from HORIBA Ltd. is
P1000878001Q

Statement issued by TÜV Rheinland Energy & Environment GmbH
dated 26 September 2024

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

The APNA 370 NO_X measuring system is based on the measuring principle of chemiluminescence.

This method allows the continuous measurement of the nitrogen oxides (NO, NO_2 and NO_X (NO + NO_2)) within the atmosphere. The concentration of NO_2 is calculated from the concentrations of NO and NO_x. The measuring principle complies with the reference measuring method described in section 5.2 of Standard EN 14211 (2012).

The sample gas is split into two streams within the APNA 370 measuring system. One stream is used for measuring the concentration of NO_X (NO + NO_2) by reducing NO_2 to NO via a NO_X converter. The other stream is used for direct determination of the NO concentration. The NO, NO_X and span gas tubes are switched every 0.5 s by using a solenoid valve and led into the reaction chamber.

Outside air is drawn through a separate filter, dried by a self-regenerative silica gel dehumidifier and passed through the ozoniser which generates the required ozone. The ozone is passed into the reaction chamber. The sample gas then reacts with the ozone and the emitted light is detected using a photo diode.

The instrument calculates the concentrations of NO, NO_2 and NO_X from the signal of the photo diode, which is proportional to the NO_X and NO concentrations, and displays the results as a continuous signal.

Dehumidifier:
The instrument comprises a self-regenerative silica gel dehumidifier which dehumidifies the air required for generating ozone. The dehumidifier comprises two cylinders. While one cylinder is active the other is regenerated. The silica gel is heated to approx. 160° for about 135 minutes for this purpose in order to remove humidity. This process is followed by a cooling phase of about 45 minutes. Both cylinders are switched every 180 minutes in order to ensure constant drying.

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 requests of the 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 APNA 370 is based on the documents listed below and the regular, continuous monitoring of the Quality Management System of the manufacturer:

Basic test
Test report: 936/21204643/C dated 7 July 2006
TÜV Immissionsschutz und Energiesysteme GmbH
Publication: BAnz. 14 October 2006, No. 194, p. 6715, chapter IV number 3.1
UBA announcement dated 12 September 2006

Notifications
Statement issued by TÜV Immissionsschutz und Energiesysteme GmbH
dated 31 March 2009
Publication: BAnz. 25 August 2009, No. 125, p. 2929, chapter III notification 2
UBA announcement dated 3 August 2009
(Soft- and hardware changes)

Initial certification according to EN 15267
Certificate No. 0000028755_00: 9 February 2011
Expiry date of the certificate: 25 January 2016
Statement issued by TÜV Rheinland Energie und Umwelt GmbH dated 6 October 2010
Test report: 936/21204643/C dated 7 July 2006
Publication: BAnz. 26 January 2011, No. 14, p. 294, chapter IV number 6
UBA announcement dated 10 January 2011

Certificate based on a notification
Certificate No. 0000028755_01: 16 March 2012
Expiry date of the certificate: 25 January 2016
Statement issued by TÜV Rheinland Energie und Umwelt GmbH dated 3 November 2011
Test report: 936/21204643/C1 dated 27 July 2011
Publication: BAnz. 02 March 2012, No. 36, p. 920, chapter V number 17
UBA announcement dated 23 February 2012

Notifications
Statement issued by TÜV Rheinland Energie und Umwelt GmbH dated 3 November 2011
Publication: BAnz AT 05.03.2013 B10, chapter V notification 8
UBA announcement dated 12 February 2013

Certificate based on a notification
Certificate No. 0000028755_02: 29 April 2014
Expiry date of the certificate: 25 January 2016
Statement issued by TÜV Rheinland Energie und Umwelt GmbH dated 5 October 2013
Test report: 936/21222689/C dated 5 October 2013
Publication: BAnz AT 01.04.2014 B12, chapter VI number 27
UBA announcement dated 27 February 2014

Renewal of certificates
Certificate No. 0000028755_03: 21 January 2016
Expiry date of the certificate: 25 January 2021

Notifications
Statement issued by TÜV Rheinland Energy GmbH dated 29 February 2016
Publication: BAnz AT 01.08.2016 B11, chapter V notification 31
UBA announcement dated 14 July 2016
(Soft- and hardware changes and new system name)

Statement issued by TÜV Rheinland Energy GmbH dated 5 March 2019
Publication: BAnz AT 22.07.2019 B8, chapter V notification 10
UBA announcement dated 28 June 2019
(Soft- and hardware changes)

Statement issued by TÜV Rheinland Energy GmbH dated 20 September 2019
Publication: BAnz AT 24.03.2020 B7, chapter IV notification 54
UBA announcement dated 24 February 2020
(Software changes)

Statement issued by TÜV Rheinland Energy GmbH dated 10 March 2020
Publication: BAnz AT 31.07.2020 B10, chapter II notification 11
UBA announcement dated 27 May 2020
(Hardware changes)

Renewal of certificates
Certificate No. 0000028755_04: 25 January 2021
Expiry date of the certificate: 25 January 2026

Notifications
Statement issued by TÜV Rheinland Energy GmbH dated 8 September 2020
Publication: BAnz AT 03.05.2021 B9, chapter III notification 36
UBA announcement dated 31 March 2021
(Software changes)

Statement issued by TÜV Rheinland Energy GmbH dated 13 September 2022
Publication: BAnz AT 20.03.2023 B6, chapter IV notification 72
UBA announcement dated 21 February 2023
(Soft- and hardware changes)

Statement issued by TÜV Rheinland Energy & Environment GmbH dated 26 September 2024
Publication: BAnz AT 19.05.2025 B3, chapter IV notification 78
UBA announcement dated 2 April 2025
(Software changes)

Renewal of certificates
Certificate No. 0000028755_05: 26 January 2026
Expiry date of the certificate: 25 January 2031

Expanded uncertainty from the results obtained in the laboratory tests for analyser 1

Measuring device:	Horiba APNA 370	Serial-No.:	SN 10021	
Measured component:	NO2	1h-limit value:	104.6	nmol/mol

No.	Performance characteristic		Performance criterion	Result	Partial uncertainty		Square of partial uncertainty	
1	Repeatability standard deviation at zero	≤	1.0 nmol/mol	0.157	$u_{r,z}$	0.05	0.0024	
2	Repeatability standard deviation at 1h-limit value	≤	3.0 nmol/mol	1.704	$u_{r,lh}$	0.10	0.0099	
3	"lack of fit" at 1h-limit value	≤	4.0% of measured value	0.200	$u_{l,lh}$	0.12	0.0146	
4	Sensitivity coefficient of sample gas pressure at 1h-limit value	≤	8.0 nmol/mol/kPa	0.143	u_{gp}	0.41	0.1680	
5	Sensitivity coefficient of sample gas temperature at 1h-limit value	≤	3.0 nmol/mol/K	0.230	u_{gt}	0.66	0.4347	
6	Sensitivity coefficient of surrounding temperature at 1h-limit value	≤	3.0 nmol/mol/K	0.264	u_{st}	0.76	0.5727	
7	Sensitivity coefficient of electrical voltage at 1h-limit value	≤	0.30 nmol/mol/V	0.122	u_V	0.41	0.1673	
8a	Interferent H_20 with 21 mmol/mol	≤	10 nmol/mol (Zero)	-0.024	u_{H2O}	0.18	0.0326	
		≤	10 nmol/mol (Span)	1.360				
8b	Interferent CO_2 with 500 µmol/mol	≤	5.0 nmol/mol (Zero)	-0.056	$u_{int,pos}$	0.63	0.3997	
		≤	5.0 nmol/mol (Span)	-2.160	or			
8c	Interferent NH_3 mit 200 nmol/mol	≤	5.0 nmol/mol (Zero)	0.056	$u_{int,neg}$			
		≤	5.0 nmol/mol (Span)	-3.620				
9	Averaging effect	≤	7.0% of measured value	5.100	u_{av}	3.08	9.4860	
18	Difference sample/calibration port	≤	1.0%	0.000	$u_{\Delta sc}$	0.00	0.0000	
21	Converter efficiency	≥	98	98.60	u_{EC}	1.46	2.1445	
23	Uncertainty of test gas	≤	3.0%	2.000	u_{cg}	1.05	1.0941	
				Combined standard uncertainty		u_c	3.8130	nmol/mol
				Expanded uncertainty		U	7.6259	nmol/mol
				Relative expanded uncertainty		W	7.29	%
				Maximum allowed expanded uncertainty		W_{req}	15	%

Expanded uncertainty from the results obtained in the laboratory tests for analyser 2

Measuring device:	Horiba APNA 370	Serial-No.:	SN 10022
Measured component:	NO2	1h-limit value:	104.6 nmol/mol

No.	Performance characteristic	Performance criterion		Result	Partial uncertainty		Square of partial uncertainty	
1	Repeatability standard deviation at zero	≤	1.0 nmol/mol	0.132	$u_{r,z}$	0.04	0.0017	
2	Repeatability standard deviation at 1h-limit value	≤	3.0 nmol/mol	1.250	$u_{r,lh}$	0.07	0.0052	
3	"lack of fit" at 1h-limit value	≤	4.0% of measured value	0.300	$u_{l,lh}$	0.18	0.0328	
4	Sensitivity coefficient of sample gas pressure at 1h-limit value	≤	8.0 nmol/mol/kPa	0.130	u_{gp}	0.37	0.1389	
5	Sensitivity coefficient of sample gas temperature at 1h-limit value	≤	3.0 nmol/mol/K	0.150	u_{gt}	0.43	0.1849	
6	Sensitivity coefficient of surrounding temperature at 1h-limit value	≤	3.0 nmol/mol/K	0.140	u_{st}	0.40	0.1611	
7	Sensitivity coefficient of electrical voltage at 1h-limit value	≤	0.30 nmol/mol/V	-0.084	u_V	-0.28	0.0787	
8a	Interferent H_20 with 21 mmol/mol	≤	10 nmol/mol (Zero)	0.000	u_{H2O}	0.15	0.0216	
		≤	10 nmol/mol (Span)	0.000				
8b	Interferent CO_2 with 500 µmol/mol	≤	5.0 nmol/mol (Zero)	-0.056	$u_{int,pos}$	0.52	0.2704	
		≤	5.0 nmol/mol (Span)	-1.820	or			
8c	Interferent NH_3 mit 200 nmol/mol	≤	5.0 nmol/mol (Zero)	0.184				
		≤	5.0 nmol/mol (Span)	-3.520	$u_{int,neg}$			
9	Averaging effect	≤	7.0% of measured value	4.400	u_{av}	2.66	7.0607	
18	Difference sample/calibration port	≤	1.0%	0.000	$u_{\Delta sc}$	0.00	0.0000	
21	Converter efficiency	≥	98	98.20	u_{EC}	1.88	3.5449	
23	Uncertainty of test gas	≤	3.0%	2.000	u_{cg}	1.05	1.0941	
				Combined standard uncertainty	u_c		3.5499	nmol/mol
				Expanded uncertainty	U		7.0999	nmol/mol
				Relative expanded uncertainty	W		6.79	%
				Maximum allowed expanded uncertainty	W_{req}		15	%

Certificate:
0000028755_05 / 26 January 2026

TÜVRheinland®
Precisely Right.

Expanded uncertainty from the results obtained in the laboratory and field tests for analyser 1

Measuring device:	Horiba APNA 370				Serial-No.:		SN 10021	
Measured component:	NO2				1h-limit value:		104.6	nmol/mol
No.	**Performance characteristic**		**Performance criterion**	**Result**	**Partial uncertainty**		**Square of partial uncertainty**	
1	Repeatability standard deviation at zero	≤	1.0 nmol/mol	0.157	$u_{r,z}$	0.05	0.0024	
2	Repeatability standard deviation at 1h-limit value	≤	3.0 nmol/mol	1.704	$u_{r,lh}$	not considered, as √2*ur,lh = 0,14 < ur,f	-	
3	"lack of fit" at 1h-limit value	≤	4.0% of measured value	0.200	$u_{l,lh}$	0.12	0.0146	
4	Sensitivity coefficient of sample gas pressure at 1h-limit value	≤	8.0 nmol/mol/kPa	0.143	u_{gp}	0.41	0.1680	
5	Sensitivity coefficient of sample gas temperature at 1h-limit value	≤	3.0 nmol/mol/K	0.230	u_{gt}	0.66	0.4347	
6	Sensitivity coefficient of surrounding temperature at 1h-limit value	≤	3.0 nmol/mol/K	0.264	u_{st}	0.76	0.5727	
7	Sensitivity coefficient of electrical voltage at 1h-limit value	≤	0.30 nmol/mol/V	0.122	u_V	0.41	0.1673	
8a	Interferent H_2O with 21 mmol/mol	≤	10 nmol/mol (Zero)	-0.024	u_{H2O}	0.18	0.0326	
		≤	10 nmol/mol (Span)	1.360				
8b	Interferent CO_2 with 500 µmol/mol	≤	5.0 nmol/mol (Zero)	-0.056	$u_{int,pos}$	0.63	0.3997	
		≤	5.0 nmol/mol (Span)	-2.160	or			
8c	Interferent NH_3 mit 200 nmol/mol	≤	5.0 nmol/mol (Zero)	0.056				
		≤	5.0 nmol/mol (Span)	-3.620	$u_{int,neg}$			
9	Averaging effect	≤	7.0% of measured value	5.100	u_{av}	3.08	9.4860	
10	Reproducibility standard deviation under field conditions	≤	5.0% of average over 3 months	3.960	$u_{r,f}$	4.14	17.1575	
11	Long term drift at zero level	≤	5.0 nmol/mol	0.400	$u_{d,l,z}$	0.23	0.0533	
12	Long term drift at span level	≤	5.0% of max. of certification range	0.820	$u_{d,l,lh}$	0.50	0.2452	
18	Difference sample/calibration port	≤	1.0%	0.000	$u_{\Delta sc}$	0.00	0.0000	
21	Converter efficiency	≥	98	98.600	u_{EC}	1.46	2.1445	
23	Uncertainty of test gas	≤	3.0%	2.000	u_{cg}	1.05	1.0941	
				Combined standard uncertainty		u_c	5.6546	nmol/mol
				Expanded uncertainty		U	11.3093	nmol/mol
				Relative expanded uncertainty		W	10.81	%
				Maximum allowed expanded uncertainty		W_{req}	15	%

Certificate:
0000028755_05 / 26 January 2026

Expanded uncertainty from the results obtained in the laboratory and field tests for analyser 2

Measuring device:	Horiba APNA 370				Serial-No.:		SN 10022	
Measured component:	NO2				1h-limit value:		104.6	nmol/mol
No.	**Performance characteristic**		**Performance criterion**	**Result**	**Partial uncertainty**		**Square of partial uncertainty**	
1	Repeatability standard deviation at zero	≤	1.0 nmol/mol	0.132	$u_{r,z}$	0.04	0.0017	
2	Repeatability standard deviation at 1h-limit value	≤	3.0 nmol/mol	1.250	$u_{r,lh}$	not considered, as √2*ur,lh = 0,1 < ur,f	-	
3	"lack of fit" at 1h-limit value	≤	4.0% of measured value	0.300	$u_{l,lh}$	0.18	0.0328	
4	Sensitivity coefficient of sample gas pressure at 1h-limit value	≤	8.0 nmol/mol/kPa	0.130	u_{gp}	0.37	0.1389	
5	Sensitivity coefficient of sample gas temperature at 1h-limit value	≤	3.0 nmol/mol/K	0.150	u_{gt}	0.43	0.1849	
6	Sensitivity coefficient of surrounding temperature at 1h-limit value	≤	3.0 nmol/mol/K	0.140	u_{st}	0.40	0.1611	
7	Sensitivity coefficient of electrical voltage at 1h-limit value	≤	0.30 nmol/mol/V	-0.084	u_V	-0.28	0.0787	
8a	Interferent H_20 with 21 mmol/mol	≤	10 nmol/mol (Zero)	0.080	u_{H2O}	0.15	0.0216	
		≤	10 nmol/mol (Span)	0.696				
8b	Interferent CO_2 with 500 µmol/mol	≤	5.0 nmol/mol (Zero)	-0.056	$u_{int,pos}$ or $u_{int,neg}$	0.52	0.2704	
		≤	5.0 nmol/mol (Span)	-1.820				
8c	Interferent NH_3 mit 200 nmol/mol	≤	5.0 nmol/mol (Zero)	0.184				
		≤	5.0 nmol/mol (Span)	-3.520				
9	Averaging effect	≤	7.0% of measured value	4.400	u_{av}	2.66	7.0607	
10	Reproducibility standard deviation under field conditions	≤	5.0% of average over 3 months	3.960	$u_{r,f}$	4.14	17.1575	
11	Long term drift at zero level	≤	5.0 nmol/mol	0.560	$u_{d,l,z}$	0.32	0.1045	
12	Long term drift at span level	≤	5.0% of max. of certification range	0.970	$u_{d,l,lh}$	0.59	0.3432	
18	Difference sample/calibration port	≤	1.0%	0.000	$u_{\Delta sc}$	0.00	0.0000	
21	Converter efficiency	≥	98	98.200	u_{EC}	1.88	3.5449	
23	Uncertainty of test gas	≤	3.0%	2.000	u_{cg}	1.05	1.0941	
				Combined standard uncertainty		u_c	5.4952	nmol/mol
				Expanded uncertainty		U	10.9903	nmol/mol
				Relative expanded uncertainty		W	10.51	%
				Maximum allowed expanded uncertainty		W_{req}	15	%