

# CERTIFICATE

## of Product Conformity (QAL1)

Certificate No: 0000053814\_01

**Certified AMS:** AO2000-Magnos28 for O<sub>2</sub>

**Manufacturer:** ABB AG  
Stierstädter Str. 5  
60488 Frankfurt/Main  
Germany

**Test Institute:** TÜV Rheinland Energy GmbH

This is to certify that the AMS has been tested  
and found to comply with the standards  
EN 15267-1 (2009), EN 15267-2 (2009), EN 15267-3 (2007)  
and EN 14181 (2014).

Certification is awarded in respect of the conditions stated in this certificate  
(this certificate contains 8 pages).

The present certificate replaces certificate 0000053814\_00 dated 4 September 2018.



Suitability Tested  
EN 15267  
QAL1 Certified  
Regular  
Surveillance

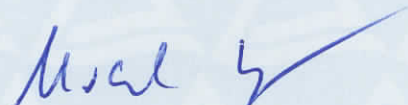
www.tuv.com  
ID 0000053814

Publication in the German Federal Gazette  
(BAnz) of 17 July 2018

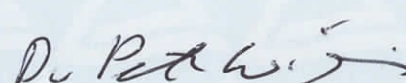
German Environment Agency  
Dessau, 14 July 2023

This certificate will expire on:  
16 July 2028

TÜV Rheinland Energy GmbH  
Cologne, 13 July 2023



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

<b>Test report:</b>	936/21236694/C dated 7 March 2018
<b>Initial certification:</b>	17 July 2018
<b>Expiry date:</b>	16 July 2028
<b>Certificate:</b>	Renewal (of previous certificate 0000053814_00 of 4 September 2018 valid until 16 July 2023)
<b>Publication:</b>	BAnz AT 17.07.2018 B9, chapter II No. 1.1

### Approved application

The tested AMS is suitable for use at plants according to Directive 2010/75/EC, chapter III (13<sup>th</sup> BImSchV:2017), chapter IV (17<sup>th</sup> BImSchV:2013), Directive 2015/2193/EC (44<sup>th</sup> BImSchV:2019), 30<sup>th</sup> BImSchV:2017, 27<sup>th</sup> BImSchV:2013 and TA-Luft:2002. The measured ranges have been selected so as to ensure as broad a field of application as possible.

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 municipal waste incineration plant.

The AMS is approved for an ambient temperature range of +5° 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 emission limit values and oxygen concentration relevant to the application.

Any potential user should ensure, in consultation with the manufacturer, that this AMS is suitable for the installation at which it will be installed.

### Note:

The legal regulations mentioned correspond to the current state of legislation during certification. 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 certification

This certification is based on:

- Test report 936/21236694/C dated 7 March 2018 of TÜV Rheinland Energy 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 17.07.2018 B9, chapter II No. 1.1,  
Announcement by UBA dated 3 July 2018:

**AMS designation:**

AO2000-Magnos28 for O<sub>2</sub>

**Manufacturer:**

ABB Automation GmbH, Frankfurt am Main

**Field of application:**

For plants requiring official approval and for plants according to the 27th BImSchV

**Measuring ranges during the performance test:**

Component	Certification range	Supplementary range	Unit
O <sub>2</sub>	0 – 25	0 – 10	Vol.-%

**Software versions:**

AMC board: 3.8.6  
Syscon: 5.1.16

**Restrictions:**

None

**Notes:**

1. The maintenance interval is four weeks.
2. It is possible to use the analyser in its versions AO2020 (19" housing for rack mounting) and AO2040 (housing for wall mounting).

**Test institute:**

TÜV Rheinland Energy GmbH, Cologne  
Report No.: 936/21236694/C dated 7 March 2018

Publication in the German Federal Gazette: BAnz AT 24.03.2020 B7, Chap. IV notification 7,  
Announcement by UBA dated 24 February 2020:

**7 Notification as regards Federal Environment Agency (UBA) notice  
of 3 July 2018 (BAnz AT 17.07.2018 B9, chapter II number 1.1)**

The latest software versions of the AO2000-Magnos28 measuring system  
for O<sub>2</sub> manufactured by ABB Automation GmbH are:

Magnos28 (AMC board): 3.9.0  
Syscon: 5.1.18

Statement issued by TÜV Rheinland Energy GmbH dated 13 September 2019

Publication in the German Federal Gazette: BAnz AT 05.08.2021 B5, Chap. IV  
notification 25, Announcement by UBA dated 29 June 2021:

**25 Notification as regards Federal Environment Agency (UBA) notices  
of 3 July 2018 (BAnz AT 17.07.2018 B9, chapter II number 1.1) and  
of 24 February 2020 (BAnz AT 24.03.2020 B7, chapter IV notification 7)**

The latest software versions of the measuring system AO2000-Magnos28 for O<sub>2</sub>  
manufactured by ABB Automation GmbH are:

Magnos28 (AMC board): 3.9.2,  
Syscon: 5.1.20

Statement issued by TÜV Rheinland Energy GmbH dated 19 February 2021

Publication in the German Federal Gazette: BAnz AT 11.04.2022 B10, Chap. VI  
notification 28, Announcement by UBA dated 09 March 2022:

**28 Notification as regards Federal Environment Agency (UBA) notices  
of 3 July 2018 (BAnz AT 17.07.2018 B9, chapter II number 1.1) and  
of 29 June 2021 (BAnz AT 05.08.2021 B5, chapter IV notification 25)**

The current software versions of the measuring device AO2000-Magnos28 for O<sub>2</sub>  
of the company ABB Automation GmbH are:

Magnos28 (AMC board):	3.9.4
Syscon:	5.1.22

The measuring device may be operated with activated temperature compensation  
as well as with hardware version 08 of the pressure sensor module.

The company ABB Automation GmbH merged with its parent company ABB AG on  
September 13. The new name of the manufacturer is ABB AG.

Statement issued by TÜV Rheinland Energy GmbH dated 14 September 2021

Publication in the German Federal Gazette: BAnz AT 20.03.2023 B6, Chap. IV notification 8,  
Announcement by UBA dated 21 February 2023:

**8 Notification as regards Federal Environment Agency (UBA) notices  
of 3 July 2018 (BAnz AT 17.07.2018 B9, chapter II number 1.1) and  
of 9 March 2022 (BAnz AT 11.04.2022 B10, chapter VI notification 28)**

The current software versions of the AO2000-Magnos28 measuring system for O<sub>2</sub>  
from ABB AG are:

Magnos28 (AMC board):	3.9.8,
Syscon:	5.1.22

The software version 3.9.6 for the AMC board is included here.

Statement issued by TÜV Rheinland Energy GmbH dated 5 September 2022

### Certified product

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

The AMS AO2000-Magnos28 is an extractive AMS and comprises the following parts:

- AO2000-Magnos28 analyser
- Heated probe incl. controller, ABB PFE 3 or PFE2
- Heated sample line (180 °C), (max. 60 m) incl. controller, inner liner made of Teflon
- ABB SCC-F sample pump
- ABB SCC-C sample gas cooler

The Magnos28 analyser is an analyser module integrated in an universal AdvanceOptima AO2000 housing. This housing accommodates the display and control unit, the evaluation unit, the analyser module and the power supply unit. Analogue outputs and data interfaces are also located here.

The housing is available in two different versions.

The AO2020 housing is the 19" version intended for rack mounting.

The AO2040 housing is intended for wall mounting and has a similar size.

Differences between the two versions are limited to the housing. All other components are identical.

### 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 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 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 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: [gal1.de](http://gal1.de).

### History of documents

Certification of AO2000-Magnos28 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. 0000053814\_00: 4 September 2018  
Expiry date of the certificate: 16 July 2023

Test report: 936/21236694/C dated 7 March 2018  
TÜV Rheinland Energy GmbH  
Publication: BAnz AT 17.07.2018 B9, chapter II number 1.1  
UBA announcement dated 3 July 2018

### Notifications

Statement issued by TÜV Rheinland Energy GmbH dated 13 September 2019  
Publication: BAnz AT 24.03.2020 B7, chapter IV notification 7  
UBA announcement dated 24 February 2020  
(Software changes)

Statement issued by TÜV Rheinland Energy GmbH dated 19 February 2021  
Publication: BAnz AT 05.08.2021 B5, chapter IV notification 25  
UBA announcement dated 29 June 2021  
(Software changes)

Statement issued by TÜV Rheinland Energy GmbH dated 14 September 2021  
Publication: BAnz AT 11.04.2022 B10, chapter VI notification 28  
UBA announcement dated 9 March 2022  
(Hard and software changes and new producer name formerly ABB Automation GmbH)

Statement issued by TÜV Rheinland Energy GmbH dated 5 September 2022  
Publication: BAnz AT 20.03.2023 B6, chapter IV notification 8  
UBA announcement dated 21 February 2023  
(Software changes)

### Renewal of certificate

Certificate No. 0000053814\_01: 14 July 2023  
Expiry date of the certificate: 16 July 2028

### Calculation of overall uncertainty according to EN 14181 and EN 15267-3

#### Measuring system

Manufacturer	ABB Automation GmbH
AMS designation	AO2000-Magnos28
Serial number of units under test	33633146 / 32679405 / 33633136 / 33633156
Measuring principle	Paramagnetism

#### Test report

Test laboratory	936/21236694/C
Date of report	TÜV Rheinland 2018-03-07

#### Measured component

Certification range	O <sub>2</sub> 0 - 25 Vol.-%
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#### Evaluation of the cross-sensitivity (CS)

(system with largest CS)

Sum of positive CS at zero point	0.00 Vol.-%
Sum of negative CS at zero point	0.00 Vol.-%
Sum of positive CS at span point	0.00 Vol.-%
Sum of negative CS at span point	0.00 Vol.-%
Maximum sum of cross-sensitivities	0.00 Vol.-%
Uncertainty of cross-sensitivity	u <sub>i</sub> 0.000 Vol.-%

#### Calculation of the combined standard uncertainty

##### Tested parameter

				u <sup>2</sup>
Standard deviation from paired measurements under field conditions *	u <sub>D</sub>	0.056 Vol.-%		0.003 (Vol.-%) <sup>2</sup>
Lack of fit	u <sub>lof</sub>	0.017 Vol.-%		0.000 (Vol.-%) <sup>2</sup>
Zero drift from field test	u <sub>d,z</sub>	0.115 Vol.-%		0.013 (Vol.-%) <sup>2</sup>
Span drift from field test	u <sub>d,s</sub>	-0.115 Vol.-%		0.013 (Vol.-%) <sup>2</sup>
Influence of ambient temperature at span	u <sub>t</sub>	0.030 Vol.-%		0.001 (Vol.-%) <sup>2</sup>
Influence of supply voltage	u <sub>v</sub>	0.006 Vol.-%		0.000 (Vol.-%) <sup>2</sup>
Cross-sensitivity (interference)	u <sub>i</sub>	0.000 Vol.-%		0.000 (Vol.-%) <sup>2</sup>
Influence of sample gas flow	u <sub>p</sub>	-0.057 Vol.-%		0.003 (Vol.-%) <sup>2</sup>
Uncertainty of reference material at 70% of certification range	u <sub>rm</sub>	0.202 Vol.-%		0.041 (Vol.-%) <sup>2</sup>

\* The larger value is used :

"Repeatability standard deviation at set point" or

"Standard deviation from paired measurements under field conditions"

Combined standard uncertainty (u <sub>c</sub> )	$u_c = \sqrt{\sum (u_{max, j})^2}$	0.27 Vol.-%
Total expanded uncertainty	$U = u_c * k = u_c * 1.96$	0.54 Vol.-%

#### Relative total expanded uncertainty

Requirement of 2010/75/EU	U in % of the range 25 Vol.-%	2.1
Requirement of EN 15267-3	U in % of the range 25 Vol.-%	10.0 **
	U in % of the range 25 Vol.-%	7.5

\*\* EU Directive 2010/75/EU does not define requirements for this component.

A value of 10.0% was used instead.