

ABB MEASUREMENT & ANALYTICS

Advance Optima

Modular continuous gas analyzers



Advance Optima gas analyzers combine advanced technologies with more than 90 years of experience in process and environmental analysis.

They are the innovative solution for the demands of today and the challenges of tomorrow.

Being tailored to satisfy the requirements of various industries, the Advance Optima series can be used in almost every form of production and has proven itself in the toughest processing environments – world-wide.

Advance Optima

Innovative modular analyzer technology

In its basic version Advance Optima consists of a central processing unit and one analyzer module. Standardized modules can be adapted to your measuring tasks and combined to systems tailored to your individual requirements. And all of these assemblies are designed to integrate flexibly with each other – from analyzer modules to housings, from displays to control units and from power supplies to sample conditioning.



Multi-analyzer systems

In its most extensive version, an Advance Optima multi-analyzer system consists of four analyzer modules and it can measure six different components. Other locally installed system components for the conditioning of sample gas, such as sample gas feeding units and coolers, can also be integrated. All the modules are operated by the central processing unit – and the analyzer module can even be installed up to 350 m away.



Reliable and powerful

- Measurements of even low level, trace values
- Calibration without test gas cylinders
- Easy-to-service design
- Standardized electrical and pneumatic connections
- Proven measuring technology with minimized maintenance
- Corrosion-proof housings made from coated stainless steel
- High quality design with a long service life



'Packaging' that fits right in

Two system housings are available: a 19" slide-in version for cabinet installation and a wall mounted housing. All these housings can be purged for the measurement of toxic or corrosive gases.



Simple, user-friendly operation

- Simultaneous display of up to six sample components
- Clear status and maintenance messages
- Operation menus with online help
- 10 menu languages are available
- Operator controls can be customized



Integrated control and monitoring

High performance processor technology for rapid signal processing is used for sophisticated calculations, such as cross-sensitivity corrections and auto-calibration. Internal PLC functions with programmable function blocks eliminate the need for additional external logic controllers.



Unrivalled economy

- Cost-effective operation, service and maintenance over the entire life cycle
- High quality design with a long lifetime
- Lower training and documentation expenses



Tailored to your needs

Easy connectivity, control, and calibration



Unlimited access to analytical data

- Ethernet with TCP/IP protocol for direct integration into existing PC networks or control systems
- OPC interface for direct integration into centralized process control equipment
- First analyzer in the market with PROFIBUS-DP/PA interface certified for emission monitoring systems according VDI 4201-2
- Modbus protocol via Ethernet and serial port, also for Windows applications and certified for emission monitoring systems according VDI 4201-3



Asset management facility wide

- The asset management software 'Analyze IT Explorer' permits centralized maintenance of all analyzers and systems via the Ethernet – as well as worldwide via an Intranet connection.
- Increased system availability through rapid troubleshooting and diagnosis
 - Reduced costs through planned predictive maintenance
 - Surveillance, interpretation and reporting according to EN 14181 with QAL3 package in Analyze IT Explorer



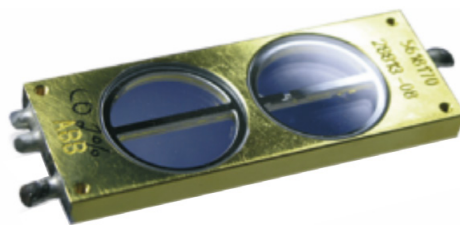
Always the right analyzer for the job

- Whatever the measuring task! Advance Optima offers analyzer modules using various measurement principles which are suitable for practically any processing task, including:
- Infrared analyzer modules
 - Ultraviolet analyzer modules
 - Thermal conductivity analyzer modules
 - Oxygen analyzer modules
 - Flame ionization detectors
 - Laser analyzer modules



Calibration cells

Calibration is necessary for all gas analyzers but the frequency varies significantly between different devices. The time and costs can increase substantially depending on the approach taken. Regulatory aspects can also have a big impact (e.g. daily validation required according to US EPA emission regulations), especially when you consider the real cost of gas cylinders.



Manufacturing

- Gas-filled calibration cell
- Tightness guaranteed by proprietary manufacturing technique
- 30 years' manufacturing experience

Suitability

- Alternative to flowing test gas
- Available in both Uras and Limas photometers
- Compliant with EN 14181 and US EPA 40 CFR 60

Proven technology

- Tested by TÜV for over 10 years
- Stability superior to many test gas cylinders
- Drift < 0.5% per year
- Certified according EN 15267

Up to 95% lower calibration costs!

Ask your local contact for more info



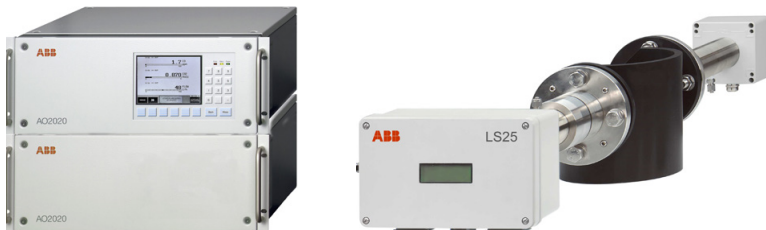
Suitable for hazardous areas

Improving safety for people, facilities and the environment

ABB offers a wide variety of different measuring principles for installation in hazardous areas. With Advance Optima, there is no need to handle multiple operation concepts or manifold setups for the different types of analyzer modules.

Zone 2 or Class I Division 2

The designs for operation in Zone 2 for measurement of non-flammable gases and the Class I, Division 2 version for the USA and Canada do not require additional case purging. All the assemblies have been tested to ensure that they are non-incendive.



Hazardous area Zone 1, 2, 21 or 22

The AO2040-Fidas24 Ex is a compact product solution for hydrocarbon measurement in hazardous areas. With the AO2040-Fidas24 Ex there is no need on user's side for additional installation or individual certification, all needed components are mounted on the AO2040 housing and are certified ex-works.



Zone 2 "Safety concept"

A sophisticated safety concept which is built into Advance Optima ensures the impermeability of its measuring system. Minimized purging volumes and superior Ex nA nC protection even permits the installation of these modules in hazardous Zone 2 areas for measurement of flammable gases.



Available approvals



Additional Information

Additional Information on AO2000 System is available at www.abb.com/.../ao2000. Alternatively simply scan this code:



Analyzer modules – world renowned brand names built on 90 years of rich heritage



Uras26

Infrared photometer

Uras26 is an NDIR photometer which can measure up to four infrared active gases simultaneously.

- Components: CO, NO, N₂O, SO₂, CO₂, CH₄, C₃H₈, C₂H₄, ...
- Ranges: 0 - 5 ppm up to 100 vol%
- Measure up to 4 components simultaneously
- Measure up to 2 gas streams continuously
- Easy to add and change measuring components in field
- Internal calibration cells minimize cost of ownership
- Gas-filled detectors for highly selective measurement



Limas21

Ultraviolet photometer

Limas21 is a robust industrial NDUV photometer which especially meets process industry requirements. The measuring principle is particularly reliable because of its high stability which is based on the four-beam signal processing principle.

- Components: NO, NO₂, SO₂, H₂S, Cl₂, CS₂, COS, ..
- Ranges: from 0 - 10 ppm (NO) up to 100 vol%
- Measures up to 5 components simultaneously
- Insensitive to H₂O and CO₂ interference
- Simultaneous NO and NO₂ measurement w/o NOx converter
- Internal calibration cells minimize cost of ownership
- Four beam detection simplifies failure diagnosis



Fidas24

Flame ionization detector

Fidas24 is a single component flame ionization detector (FID) optimized for the continuous monitoring of volatile organic carbons (VOCs).

- Components: THC, TOC, VOC, CnHm
- Ranges: 0 - 10 ppm up to 10,000 ppm
- Excellent temperature stability through single block design
- Automatic and reliable re-ignition on flame out
- Injector for sample transport with no moving parts
- Optional heated connector block to avoid cold spots
- Optional internal pump for mobile applications



Magnos28

Paramagnetic detector

Magnos28 represents the future of paramagnetic oxygen measurement. An outstanding characteristic of this analyzer is its long-term stability. It is also suitable for measuring rapid changes in the concentration of the sample gas.

- Components: O₂
- Ranges: 0 - 0.5 vol% up to 100 vol%
- Patented microwing® offers improved repeatability
- Semi-automatic manufacturing for consistent quality
- Inert materials suitable for corrosive applications
- Fast response for improved process control
- Suppressed ranges (99,5 - 100 vol%) for purity applications



Magnos27

Thermomagnetic detector

Magnos27 is based on the thermomagnetic measuring principle. The robust measuring cell with no moving parts makes the Magnos27 resistant to vibrations and shocks and especially suitable for the use in rough environment.

- Components: O₂
- Ranges: 0 - 3 vol% up to 100 vol%
- Reliable measurement for flue gas applications
- Robust cell design ideal for corrosive samples
- Easy to clean even after liquid/acid contamination
- Very popular for cement and metals applications



Additional Information

Additional Information on AO2000 System is available at www.abb.com/.../ao2000. Alternatively simply scan this code:





ZO23

Zirconium dioxide detector

ZO23 measures the gas concentration with a zirconium dioxide measuring cell.

- Components: O₂
- Ranges: 0 - 1 ppm up to 250,000 ppm
- Trace level measurement for purity applications
- Wide dynamic range for start-up / shut-down operation
- T90 response time < 60 sec for alternation of 2 test gases
- Automatic self-check function without test gases



LS25

In-situ Laser

LS25 is an in-situ laser analyzer which selectively measures the concentration of up to two IR active sample components directly in the process.

- Components: O₂, NH₃, HCl, H₂O, CO, CO₂, CH₄, HCN, NO, NO₂, ...
- Ranges: 0 – 2 ppm up to 0-100vol%
- Dual components possible
- Analyzer for harsh conditions
- Up to max. 10 bar
- Up to max. 1500 °C
- High dust loads
- Up to 4 analyzers per central unit



O₂ Sensor

Electrochemical sensor

The O₂-Sensor is an electrochemical oxygen sensor which reliably measures O₂ in stack gases.

- Components: O₂
- Ranges: 0 - 1 vol% up to 25 vol%
- Low cost option for O₂ measurement
- Up to two sensors possible together with Uras
- 6 - 24 month sensor lifetime depending on gas composition
- Certified for continuous emission monitoring



Caldos25

Thermal conductivity detector

Caldos25 measuring principle is based on the differences in thermal conductivity between gases. The Caldos25 is designed for highly corrosive applications.

- Components: H₂ in N₂ or air, SO₂ in N₂ or air, H₂ in Cl₂, ...
- Ranges: 0 - 100 vol.% or 0 vol.%-saturation
- Zero-point calibration and end-point calibration



Caldos27

Thermal conductivity detector

Caldos27 measuring principle is based on the differences in thermal conductivity between gases. Small measuring ranges and fast measurements are characteristic for Caldos27.

- Components: H₂, He, Ar, N₂, ...
- Ranges: 0 – 0.25 vol% up to 100 vol%
- Flexibility to cover wide variety of applications
- Fast response (T90 < 2s) for improved process control



Always the right analyzer for your measuring task

Uras26	Magnos27	Magnos28
<p>Infrared photometer</p> <p>Typical applications</p> <ul style="list-style-type: none"> • Emission monitoring • Landfill gas monitoring • purity monitoring • Burner optimization • Fermentation process monitoring • Blast furnace gas analysis 	<p>Thermomagnetic detector</p> <p>Typical applications</p> <ul style="list-style-type: none"> • Flue gas analysis • Lime-Kiln gas analysis • Off-gas analysis of ore roasting 	<p>Paramagnetic detector</p> <p>Typical applications</p> <ul style="list-style-type: none"> • Oxygen purity measurement • Air separation plants • Biogas monitoring • Process gas monitoring • Inert gas safety measurement • Emission monitoring
<p>Typical industries</p> <ul style="list-style-type: none"> • Power industry • Chemistry and Pharmacy • Gas Industry • Metals and Minerals • Automotive Industry 	<p>Typical industries</p> <ul style="list-style-type: none"> • Cement industry • Metals and Minerals • Combustion 	<p>Typical industries</p> <ul style="list-style-type: none"> • Power industry • Chemistry and Pharmacy • Gas Industry • Metals and Minerals • Automotive Industry
<p>Flame ionization detector</p> <p>Typical applications</p> <ul style="list-style-type: none"> • Emission monitoring • Process (chemical processes or solvent recovery) • Quality control (HPI processing industry) • Safety measurement (HPI processing industry) • Purity of gases such as O₂, N₂ and Ar 	<p>Ultraviolet photometer</p> <p>Typical applications</p> <ul style="list-style-type: none"> • Nitric acid production • Purity measurement in the chemical industry • Production and processing of cellulose and viscose • Natural gas and biogas analysis • Cl₂ production and processing • Emission monitoring of stack gas and DeNO_x processes 	<p>Typical industries</p> <ul style="list-style-type: none"> • Power industry • Chemistry and Pharmacy • Metals and Minerals • Pulp and Paper
<p>Typical industries</p> <ul style="list-style-type: none"> • Power industry • Chemistry and Pharmacy • Gas Industry • Metals and Minerals • Automotive Industry 		

Z023	O ₂ Sensor	LS25
<p>Zirconium dioxide detector</p> <p>Typical applications</p> <ul style="list-style-type: none"> • Purity measurement • Air separation plants • Quality control in tank farms 	<p>Electrochemical sensor</p> <p>Typical applications</p> <ul style="list-style-type: none"> • Emission monitoring 	<p>In situ laser</p> <p>Typical applications</p> <ul style="list-style-type: none"> • Process measurement • Emission control and monitoring
<p>Typical industries</p> <ul style="list-style-type: none"> • Gas Industry • Metals and Minerals 	<p>Typical industries</p> <ul style="list-style-type: none"> • Power industry <ul style="list-style-type: none"> – Power plants – Waste Incinerators 	<p>Typical industries</p> <ul style="list-style-type: none"> • Metals and Minerals • Power Stations / Waste Disposal

Caldos25	Caldos27
<p>Thermal conductivity detector</p> <p>Typical applications</p> <ul style="list-style-type: none"> • Chlorine production • Analysis of SO₂ in metal roasting plant off-gas • Ammonia dissociation 	<p>Thermal conductivity detector</p> <p>Typical applications</p> <ul style="list-style-type: none"> • Hydrogen purity measurement • Turbo generator monitoring • Inert gas monitoring • Monitoring of explosive limits
<p>Typical industries</p> <ul style="list-style-type: none"> • Chemistry and Pharmacy • Petrochemical • Metals and Minerals 	<p>Typical industries</p> <ul style="list-style-type: none"> • Chemistry and Pharmacy • Petrochemical • Gas industry • Power industry

AO2000 System

Complete. Configurable. Consistent.

Complete. From sampling to measurement.

- With gas sampling, sample conditioning and gas analyzer
- Certified AO2000 series analyzers
- Physically and digitally integrated sample handling
- Inclusive system control and self-monitoring
- For installation in non-hazardous area

Configurable. Tailored to your needs.

- Pre-engineered for known applications
- Adaptable to even the most challenging applications
- In sheet steel or glass-fiber cabinet or on mounting plate
- Automated generation of system drawings
- Integration of external signals for example, dust, p, T, V and mercury to transmit to DCS or DAHS

Consistent. The quality you expect.

- Produced in Germany
- Easy operation via front door
- Familiar and service-friendly internal layout

World leading AO2000 analyzer modules

- Uras26 or Limas21 UV photometers
- Magnos28 or Magnos27 paramagnetic oxygen analyzers or electrochemical oxygen sensor
- Fidas24 flame ionization detector
- Caldos25 or Caldos27 thermal conductivity analyzers

Automatic calibration normally with air and integrated calibration cells, i. e. without use of test gas bottles

Options

- Dual Sampling for simultaneous measurement at two different sampling locations
- Dual Switching for measurement at two sampling locations or for uninterrupted measurement at one sample location for CO monitoring

Approvals

CSA approval for 'General Purpose' use



NO₂/NO Converter SCC-K



Sample Gas Feed Unit SCC-F



Sample Gas Cooler SCC-C



Additional Information

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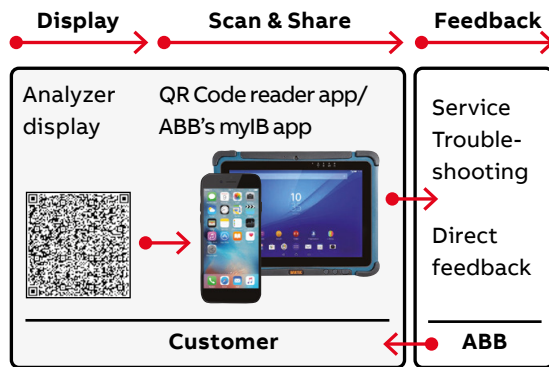


Unique Service Possibilities

Dynamic QR codes & Condition monitoring

Dynamic QR Code

A unique feature to display dynamically generated QR codes on the analyzer display for easy communication. In addition to static information for system identification, it contains also dynamic information on system configuration and analyzer health status.



Benefits

- Relevant diagnostic data quickly relayed to ABB
- No network connection required
- Lower investment cost to enable real time data analysis from ABB expert
- Right information = Rapid fault resolution
- No need of specialist operator knowledge

Condition Monitoring

A software solution and service that harnesses the expertise and experience ABB has built-up over many decades.

Utilizing a robust, industrial-grade MicroPC, data can be periodically gathered from the ABB gas analyzers and, either processed on site or, transmitted securely to ABB via email, where it is compared against established performance benchmarks in order to identify any indication of a developing fault as early as possible.

Enabling the shift from preventive to predictive maintenance for gas analyzers

Benefits

- Condition Monitoring provides an option of either a generated report that can be emailed or a real time access to the live analyzer data
- Prompts remote analysis by ABB experts: Identify potential issues before device failure
- Performs regularly scheduled on site or remote health checks of analyzers - no on-site labor required
- Helps assure 24/7/365 emissions measuring compliance

Additional Information

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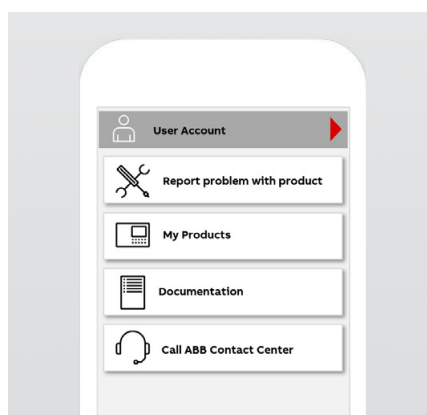


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www.abb.com/measurement