

Safety Concept

Safe measurement of flammable gases with AO2000



A consistent concept for measuring flammable gases in Zone 2

You are measuring flammable process gases? The measuring point is installed in the Ex-Zone 2? Or in an analyzer house in a hazardous environment?

Previous devices from the manufacturer were often cumbersome, special solutions. Expensive to install. With external, high-cost components for monitoring the purging process. Complicated to maintain, expensive to purchase and operate.

Typical applications

- Chemical industry
- Process industry
- Pharmaceutical industry
- Biogas plants
- Waste disposal sites and sewage treatment plants
- Production, storage, processing, and transport of flammable gases in hazardous areas of Zone 2

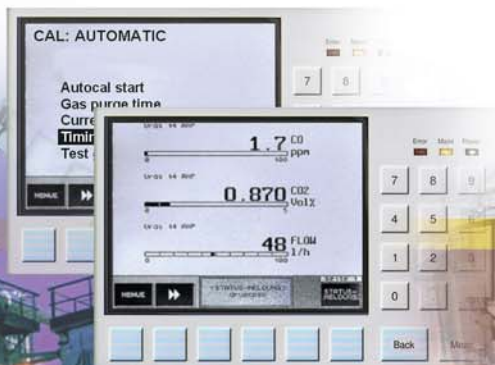


ABB now offers an analyzer series which solves all these problems with a consistent concept:

AO2000 with Safety Concept ...

- measures flammable gases in Zone 2
- separates the gas paths from the measuring equipment
- uses non-incendive, non-sparking electronics (Ex nAC)
- provides an internally monitored pressurized enclosure (Ex nP)
- requires only a small amount of purging gas
- does not require a restricted breathing enclosure
- is, thus, virtually maintenance-free
- can be permanently monitored via PC networks
- provides digital alarm contacts and error messages, also as e-mail or SMS¹⁾
- ATEX-compliant, Category II 3 G

¹⁾ with "Analyze^{IT} Explorer" asset management software in Ethernet networks

The concept

The analyzers belong to the modular AO2000 series and have already been used for reliable continuous process gas measurement in many industries for many years.

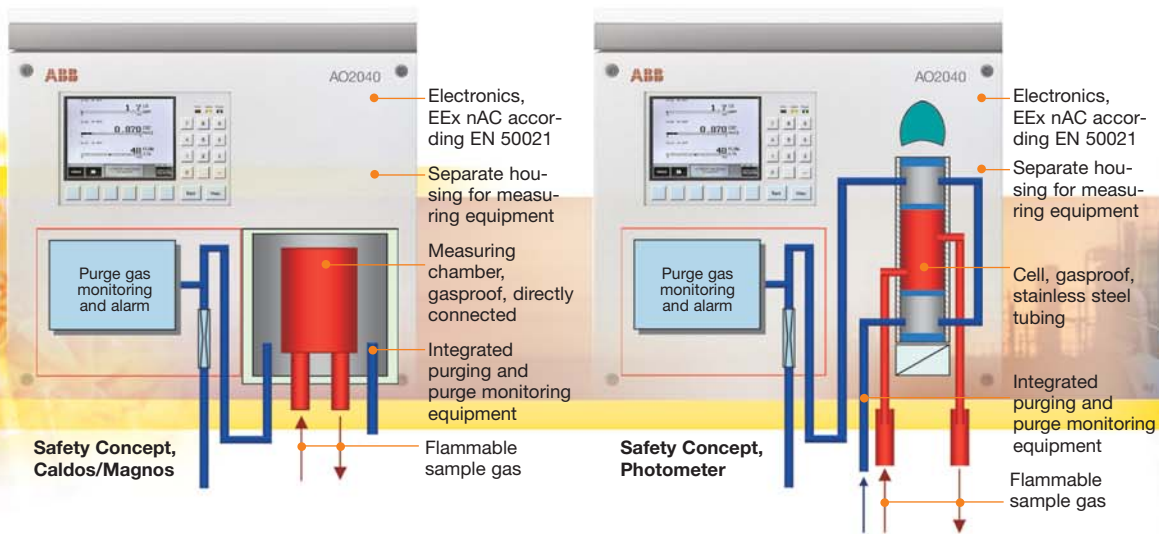
Analyzer modules for the Safety Concept:

- Limas11 IR/UV photometer, with stainless steel cell
- Uras14 photometer, with aluminum cell
- Caldos15/17, with direct sample gas connectors in a purged thermostat housing
- Magnos106, with direct sample gas connectors in a purged thermostat housing



Limas11 and Uras14 **photometers** are provided with safety cells with welded stainless steel pipes, ensuring complete separation of the entire gas path from the measuring electronics. Inert gas (e.g. nitrogen) only flows through the cell's window area. The purge gas pressure is constantly held at a value slightly higher than the sample gas pressure to prevent the sample gas escaping from the sample gas path and permeating into the purge gas path.

AO2000 electronics meet the highest requirements of protection type EEx nA and nC in accordance with the new standard EN 50021 for the Category 3G and use in Zone 2. This means they are not a potential ignition source and can be used in Zone 2 environments without additional purging. No special sealing of the housing is required to achieve restricted breathing-protection, type IP54 suffices. As a result, there is no need for costly verifications to ensure full operational tightness.



The same procedure is used for purging Caldos/Magnos **analyzers**. The purging gas only flows around the measuring chamber in the temperature-controlled enclosures. The sample gas is fed directly from the external connectors into the measuring chamber, thus also ensuring hermetic sealing of the measuring electronics here.

The **monitoring** equipment is fully integrated into the inside of the housing. The purge gas flow is monitored by a built-in flow guard. An alarm signal is output when the flow exceeds or falls below the selectable limit values. The monitoring data is controlled and processed by the AO2000 electronics.

This results in a simplified pressurized enclosure in accordance with EEx nP.

The devices do not require any additional external components and meet all safety requirements for the measurement of flammable gases in Zone 2.

Safety Concept benefits:

- Very small purge volumes
- Extremely low purge gas consumption
- Monitoring module integrated in every analyzer
- Two pre-programmed alarm limits
- Digital alarm contact
- Alarms indicated by messages in the display and via the Ethernet interface

The analyzers provide the full functionality of the AO2000 family. As a result, the Safety Concept permits the realization of multi-analyzer systems with up to four analyzer modules on one control unit.

The system's modularity also reveals its strengths here, especially through the high potential savings regarding the housings and control electronics.

Safety Concept – safe intelligent solutions.



Analyzer technology is our strength

ABB is one of the leading international companies in the field of analyzer technology. Thanks to decades of experience, we can develop innovative instruments and systems to meet your company's individual requirements.

And with a distribution network covering over 40 countries, ABB's know-how is available to you – worldwide.

Naturally, after any purchase after-sales services are just as important to you, as they are to us. That's why we offer you a broad spectrum of specialized services, such as: continuous maintenance, analyzer system modifications and troubleshooting etc. We'll be pleased to put together an individual service package for you.

ABB is your partner: From consulting to project planning, from system installation to after-sales service.



Tradition and innovation

More than 75 years of experience in the development and production of analyzers as well as regular contacts with our customers are the basis for our innovative solutions – which have always been the market leader. Under the brandname "Hartmann & Braun", our products for the continuous measurement of process gases have gained an outstanding international reputation and represent the leading edge of technology. Since then, analyzers with the names Uras, Limas, Caldos and Magnos have enjoyed worldwide acclaim and stand for the highest efficiency. Today, more than 30,000 of these analyzers have been installed in virtually every industry – around the world.

ABB continuously optimizes its products, therefore the technical data in this document is subject to change.

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