



EasyLine  
Continuous gas analyzers  
So smart, they're simple

# Reliable – economical – powerful

EasyLine is both a powerful and affordable line of instruments for the monitoring of gas concentrations in numerous applications. EasyLine is based on the proven and reliable analyzer technology of ABB for extractive continuous gas analysis. EasyLine is available in two versions, which are optimized for the various installation requirements of the respective location.

## Typical applications

- Emission measurement pursuant to the European Directive 2001/80/EC, integrated QAL3 reporting according to EN 14181
- Combustion processes
- Blast furnace and converter gas analysis
- Turbogenerator monitoring
- Industrial gas filling
- Landfill gas monitoring
- Biofermenters
- Ambient air monitoring
- Silo monitoring
- O<sub>2</sub> trace and purity measurement
- Warehouses

The advantages to you – EasyLine offers:

## Proven and reliable measurement technology

- Infrared photometer
- Ultraviolet photometer
- Magnetomechanical oxygen analyzer
- Thermomagnetical oxygen analyzer
- Electrochemical oxygen sensor
- Thermal conductivity analyzer for binary gas mixtures
- Trace oxygen analyzer
- Flame ionization detector analyzer
- Automatic calibration without test gas cylinders for most applications
- Extensive self-diagnosis functions with output of error messages
- Optionally with integrated gas feed
- Measurement of flammable and non-flammable gases without purging
- Available in a 19-inch slide-in housing or in a wall-mount housing

## The efficient alternative

- EasyLine offers an excellent price-performance ratio.

## Convenient operation and configuration

- Simple intuitive operation, menu-driven via five buttons
- Back-lit display with graphics capability
- Information presentation in several languages
- Individual configuration of the inputs/outputs

## Interface to external controllers

- Ethernet interface with Modbus TCP/IP. Also used for configuration, software update and QAL3 data transfer
- Modbus or Profibus protocol for networking with a PC, PLC or process control system
- Modbus DDE driver for integration into a Windows environment for simple reading, archiving and visualization of data

## Internal QAL3 function

- Integrated QAL3 reporting according to EN 14181
- Data storage for one year minimum
- Standard web browser access and Ethernet interface



# Tailored combinations for your measuring tasks

The combination of different analyzers provides optimum flexibility for your application.

Analyzers combination	Typical applications
IR photometer and electrochemical oxygen sensor	Emission monitoring with combined
IR photometer and magnetomechanical oxygen analyzer	CO, CO <sub>2</sub> and O <sub>2</sub> measurement
IR photometer and thermomagnetical oxygen analyzer	Process measurement in cement plants
IR photometer and 2 electrochemical oxygen sensor	CO, CO <sub>2</sub> , NO and O <sub>2</sub> measurement
IR photometer and thermal conductivity analyzer	Blast furnace gas analysis with combined H <sub>2</sub> and CO, CO <sub>2</sub> measurement for cross-sensitivity correction
UV photometer and paramagnetic oxygen analyzer	Emission monitoring with combined
UV photometer and electrochemical oxygen sensor	NO, NO <sub>2</sub> , SO <sub>2</sub> and O <sub>2</sub> measurement

## Automatic calibration without test gas cylinders

Automatic calibration and the use of the superior calibration cell technology in the photometer dispenses with the need for expensive test gas cylinders in most applications. No recalibration of the end-point with external test gas is required. Zero-point calibration is performed with ambient air.

## 19-inch housing with 3 height units

- Ideal for mounting in a rack
- Optionally with an integrated pump for the gas feed-in, a solenoid valve for the connection of test gas (air) and a sample gas filter

## Wall-mounted housing, compact and purgeable (IP65)

- Space-saving assembly in analyzer compartments
- Easy to maintain installation on mounting panels
- Usable for installation in Zone 2 for the measurement of non-flammable gases

## The advantages to you

- Effective and compact solution
- Simplifies the engineering as well as the installation of hoses or pipes in the systems
- Cost-saving from documentation to spare parts inventory

## Measurement of flammable gases without purging

The 19-inch versions of the EasyLine analyzers are particularly suitable for measuring flammable gases in non-explosive environments. For this application, the gas feed paths are made of stainless steel piping or sample gas is passed directly to the analyzer via the gas connections. The gas exchange between EasyLine and the environment ensure that an LEL is not reached inside the enclosure.

- No purging with inert gas necessary
- No expenditure for inert gas provision and monitoring of purging
- German TÜV certificate



# EasyLine analyzers in detail – for precise and

## Infrared Photometer Uras26

The continuous NDIR industrial photometer can selectively measure concentrations of up to four sample components. The analyzer features gas-filled opto-pneumatic radiation detectors. Detector filling corresponds to the gas being measured. This means that the detector provides optimum sensitivity and high selectivity compared with the other gas components in the sample.

### Typical applications

- Emission monitoring to the European Directive 2001/80/EC including CO<sub>2</sub> measurement for emissions trading
- Combustion control
- Biofermenters

### Sample components – smallest measuring ranges

CO	0...100 ppm
CO <sub>2</sub>	0...100 ppm
NO	0...150 ppm
SO <sub>2</sub>	0...100 ppm
N <sub>2</sub> O	0...100 ppm
CH <sub>4</sub>	0...100 ppm

- With stainless steel piping for flammable gas mixtures
- Two measuring ranges for each component

### Calibration

- Automatic calibration
- Calibration with air and gas-filled calibration cells at the zero and end-point ensure plausible measured values
- Calibration cells with proven stability over many years dispense with the need for expensive test gas cylinders and reliably adjust the sensitivity

### Measurement principle

Non-dispersive infrared absorption in the wavelength range  $\lambda = 2.5...8 \mu\text{m}$ .

## Ultraviolet photometer Limas23

Limas23 is an UV-RAS industrial photometer for multi-component measurement that operates within the UV spectrum range  $\lambda = 200$  to 600 nm. Limas23 can be combined with the paramagnetic O<sub>2</sub> analyzer Magnos206 or an electrochemical O<sub>2</sub> sensor. Limas23 continuously measures the components NO<sub>x</sub> as NO and NO<sub>2</sub> without the use of a converter, as well as the third component SO<sub>2</sub>, with detection limits of < 0.5 ppm and maximum stability of measured values.

### Typical applications

- Emission monitoring; Limas23 combined with Magnos206 in one device, measures all relevant pollutant and sample components like NO, NO<sub>2</sub>, SO<sub>2</sub> and O<sub>2</sub>
- Direct NO and NO<sub>2</sub> measurement in DeNO<sub>x</sub> installations
- Exhaust air and purity measurement in chemical applications

### Sample components – smallest measuring ranges

NO	0...50 ppm
NO <sub>2</sub>	0...50 ppm
SO <sub>2</sub>	0...100 ppm

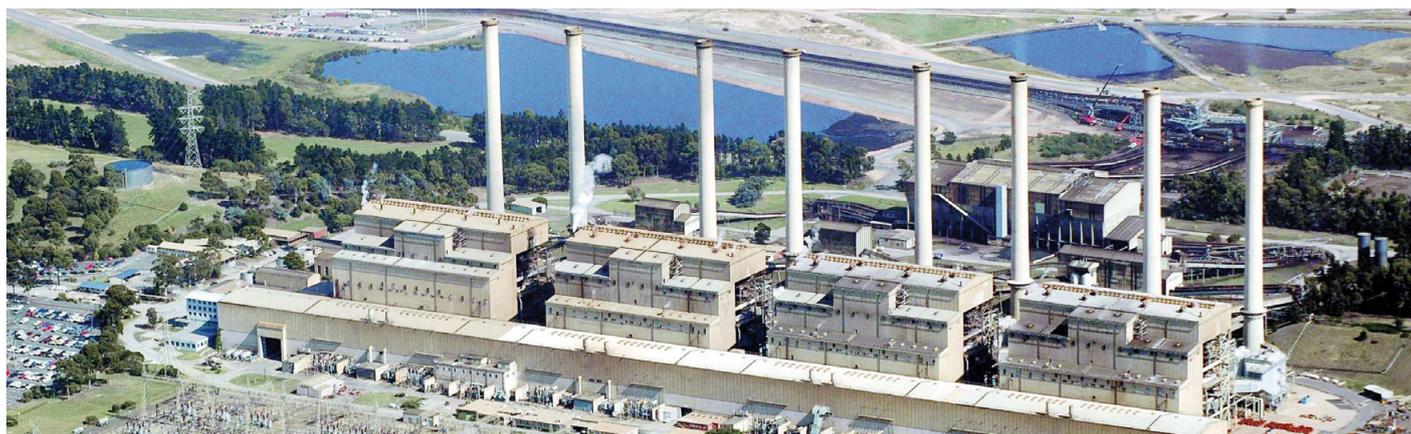
- Quartz cells for applications with corrosive gases
- Two measuring ranges for each component

### Calibration

- Automatic calibration
- Calibration with air and gas-filled calibration cells at the zero and end-point ensure plausible measured values

### Measurement principle

- Ultraviolet resonance absorption spectroscopy (UV-RAS) for NO
- Non-dispersive ultraviolet absorption (NDUV) for SO<sub>2</sub> and NO<sub>2</sub> in the wavelength range  $\lambda = 200...600 \text{ nm}$ .



# reliable measurements

## Oxygen analyzer Magnos206

The Magnos206 is based on the magnetomechanical measuring principle. Thanks to the short  $T_{90}$  time, the Magnos206 is also suitable for measuring rapid changes in the concentration of the sample gas. The ability to freely select measuring ranges and set suppressed ranges means that the analyzer can be easily adapted to specific measurement tasks. Calibration of the zero-point is only required once a month using air or nitrogen.

### Typical applications

- Oxygen purity measurement
- Air separation plants
- Biogas monitoring
- Process gas monitoring
- Emission monitoring

### Sample component

O<sub>2</sub>

### Measuring ranges

- Smallest measuring range: 0...2 Vol.-% O<sub>2</sub>
- Largest measuring range: 0...100 Vol.-% O<sub>2</sub>
- Measuring range suppression max. 1:50, e.g. 98...100 Vol.-% O<sub>2</sub>
- Two measuring ranges

### Calibration

- Zero- and end-point calibration with nitrogen and air or test gas mixtures is only required once a month
- Zero-point calibration with ambient air
- Automatic calibration

## Magnos27

The Magnos27 is based on the thermomagnetical measuring principle. The robust measuring cell means that the Magnos27 is especially resistant to vibrations and shocks.

### Typical applications

- Flue gas analysis
- Metal roasting plant off-gas analysis
- Cement flue gas analysis

### Sample component

- O<sub>2</sub> in flue gas or nitrogen

### Measuring ranges

- Smallest measuring range: 0...10 Vol.-% O<sub>2</sub>
- Largest measuring range: 0...100 Vol.-% O<sub>2</sub>

### Calibration

- Zero-point calibration with oxygen-free process gas or substitute gas
- End-point calibration with process gas having a known oxygen concentration or with substitute gas

### Measurement principle

The measuring method of this analyzer module is based on the specific paramagnetic behavior of oxygen.



# EasyLine analyzers in detail

## Precise and reliable measurements

### Thermal conductivity analyzer Caldos27

Small measuring ranges and fast measurements are characteristic for the Caldos27 thanks to its silicon sensor. The smallest volumes and the direct coupling to the gas feed path result in extremely short  $T_{90}$  times. The measuring ranges can be freely selected. The extremely high long-time stability of the sensor largely enables single-point calibration with only one gas.

### Typical applications

- Hydrogen purity measurement
- Turbogenerator monitoring
- Inert gas monitoring
- Monitoring of explosive limits

### Sample components – smallest measuring ranges

More than 30 binary gas mixtures are configurable. The active measuring component can be selected out of four gas mixtures.

- Two measuring ranges for each component

### Calibration

- Zero-point calibration with sample component-free process gas or substitute gas
- End-point calibration with process gas with a known sample gas concentration or with a substitute gas
- Simplified calibration with standard gas avoids the need for separate zero and end-point calibration
- Automatic calibration

### Dynamic response

$T_{90}$  time < 2 s

### Flame Ionization Detector Fidas24

The Fidas24 is a single component FID optimized for the continuous monitoring of volatile organic carbons (VOC's) or alternatively called hydrocarbons (HC) in industrial gases. It can be employed in a vast number of applications, measuring hydrocarbons from low ppm levels as in emission applications through to 1 Vol% measurements, which is for use in process applications.

### Typical applications

- Process (THCs in steam, solvent recovery)
- Quality (HPI processing industry, ind. gases)
- Safety (HPI processing industry)
- Power plants, waste incinerators monitoring
- Chemical process plant monitoring
- Solvent recovery systems monitoring
- Waste water monitoring
- Development of combustion engines for the automotive, marine and stationary operation
- Emissions monitoring according to EU guidelines, QAL3

### Sample components

Hydrocarbons: Total C,  $\text{CH}_4$ ,  $\text{C}_3\text{H}_8$ , etc.

### Measuring ranges

- Smallest measuring range: 0...5 mgC/m<sup>3</sup> (Total C) or 10 ppm  $\text{CH}_4$
- Largest measuring range: 1 Vol% ( $\text{CH}_4$ )

### Calibration

- Manual or automatic calibration

### Measurement principle

- Flame ionization



# Quality monitoring – EN 14181 – QAL3

## Trace Oxygen Analyzer ZO23

The trace oxygen analyzer ZO23 measures the gas concentration with a zirconium dioxide measuring cell.

The measuring element consists of ceramics with a platinized surface, conducting oxygen ions at temperatures typically above 600 °C. The measuring cell is catalytically inactive. The measuring method is especially advantageous to small measuring ranges of down to 1 ppm. This makes the analyzer particularly suitable for measuring oxygen in pure gases.

## Typical applications

- Purity measurement
- Air separation plants
- Quality control in tank farms

## Sample component

O<sub>2</sub> in nitrogen or argon

## Measuring ranges

- Minimal measuring range: 0...1 ppm
- Two measuring ranges free adjustable to 250,000 ppm
- Factory setting: 0...1/10 ppm

## Measurement principle

Measurement of oxygen with catalytically inactive ZrO<sub>2</sub> cell

## Dynamic response

T<sub>90</sub> time < 60 s when switching from sample to test gas

## Calibration

Manual or automatic calibration

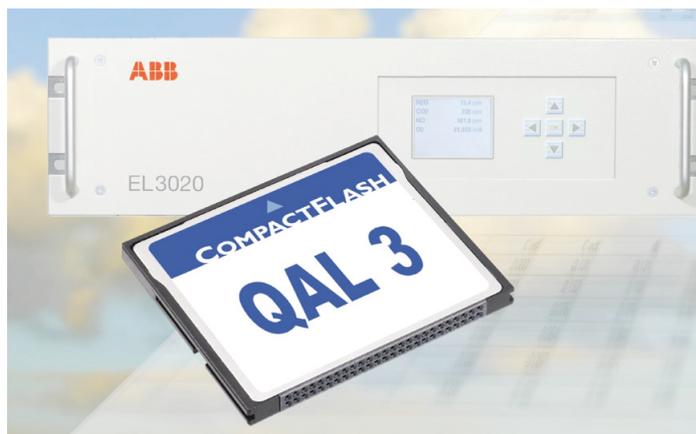
## Quality control based on EN 14181, QAL3

With the EasyLine analyzers, ABB offers a completely automated QAL3 solution to monitor and document precision and drift in the analyzer. With this function operators will be supported to fulfill official requirements for their plants, subject to authorization. This means no additional tasks to perform for the user with regard to QAL3 checking.

- Automated capture, checking and documentation of drift and precision at the zero and reference points.
- Creation of Shewhart or CUSUM control charts. Presentation and calculation method can be selected. The documentation is presented in the form of tables with alarm value infringements highlighted in color.
- Digital document archiving in database. All required QAL3 parameters such as date and time of adjustments, instrument data and unlimited comments are captured.
- Data storage for one year minimum.
- Readout of data will be performed via web browser and Intranet or Internet connections, AnalyzeIT Explorer or directly via PC. In addition, further data processing with a table calculation program is possible.
- Webserver and Ethernet connection are integrated in the analyzer.

## The Added Value – What you can expect from a market leader

As one of the world's leading suppliers of analyzer technology, we offer additional benefits and services other manufacturers can not provide. With the added values ABB Analytical helps to improve performance and reliability at work. Learn more about our Added Values on [www.abb.com/analytical](http://www.abb.com/analytical)



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