
ABB MEASUREMENT & ANALYTICS

Magnos28

Paramagnetic oxygen measurement reaches new heights



Applications

Oxygen measurement

Emission monitoring

- EU Directive 2010/75/EC
- US EPA (40 CFR 60 / 75)

Power industry

- Process control, e.g. combustion optimization
- Safety measurement, e.g. coal mill

Chemicals, Oil & Gas industry

- Process control, e.g. recycling gas
- Safety measurement, e.g. inert gas monitoring

Industrial Gas industry

- Process control, e.g. air separation unit
- Quality measurement, e.g. oxygen purity

Metals & Minerals industry

- Process control, e.g. blast furnace
- Safety measurement, e.g. inert gas monitoring

Automotive & Marine industry

- Engine exhaust measurement



Highlights

Paramagnetic oxygen measurement reaches new heights

Revolutionary new microwaving technology

- Trust in unrivalled repeatability and precision
- Confidence controlling your process

Game-changing production process

- Assured quality through digital manufacturing
- Consistent performance from sensor to sensor

Refined for challenging applications

- Robust and reliable sensor reduces downtime
- Increased selectivity for complex gas streams

Fast results when every second counts

- Tighter and faster control of your process
- Ideal for rapidly changing oxygen concentrations

Welcome to high definition measurement

- Improved accuracy at high and low concentrations
- More precise control of your process



Magnos28

Represents the future of paramagnetic oxygen measurement, leveraging ABB's pioneering technology leadership and over 75 years of innovation in the field of continuous gas analysis.

This exciting new product completely rethinks paramagnetic oxygen analysis, replacing the glass dumbbell with a revolutionary new silicon sensor, the microwing.

The automatic manufacturing process is capable of sub-micrometer precision leading to levels of quality and reproducibility beyond anything that is currently available on the market.

Available in Advance Optima, EasyLine and EL3060 gas analyzer series.

Revolutionary new microwiring technology

Silicon based microwiring takes paramagnetic oxygen measurement to the next level of performance.

Fundamental revision of the sensor design

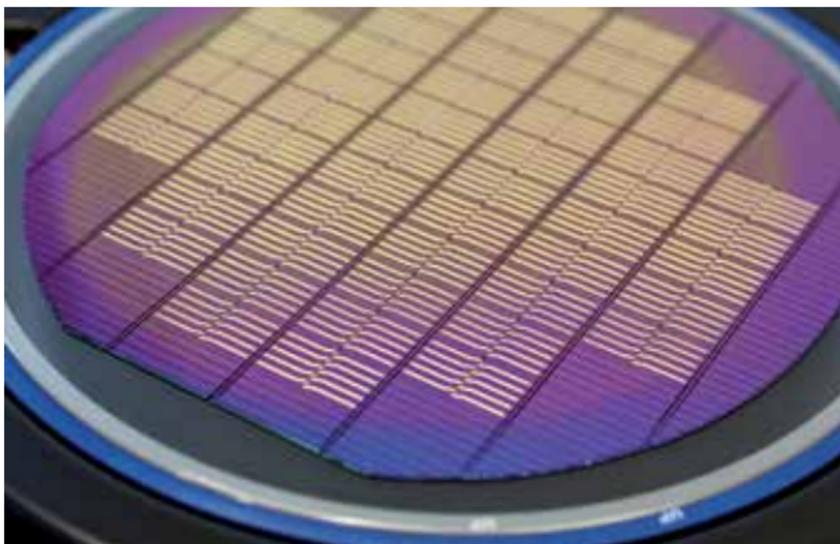
- Patent pending microwiring technology
- Replaces glass dumbbell with its circuit path, mirror, mounting and taring weights
- All-in-one device without any attachments

Promises greatly improved repeatability and precision

- Latest semiconductor based production technologies
- Completely new approach with absolutely reproducible quality

Ideally suited to paramagnetic oxygen measurement

- Very low mass and high width-to-thickness ratio
- Optimized magnetic field distribution in the measurement position



Game-changing production process

Latest digital manufacturing technology enables sub-micrometer precision.

Tolerances one-hundred times the width of a human hair

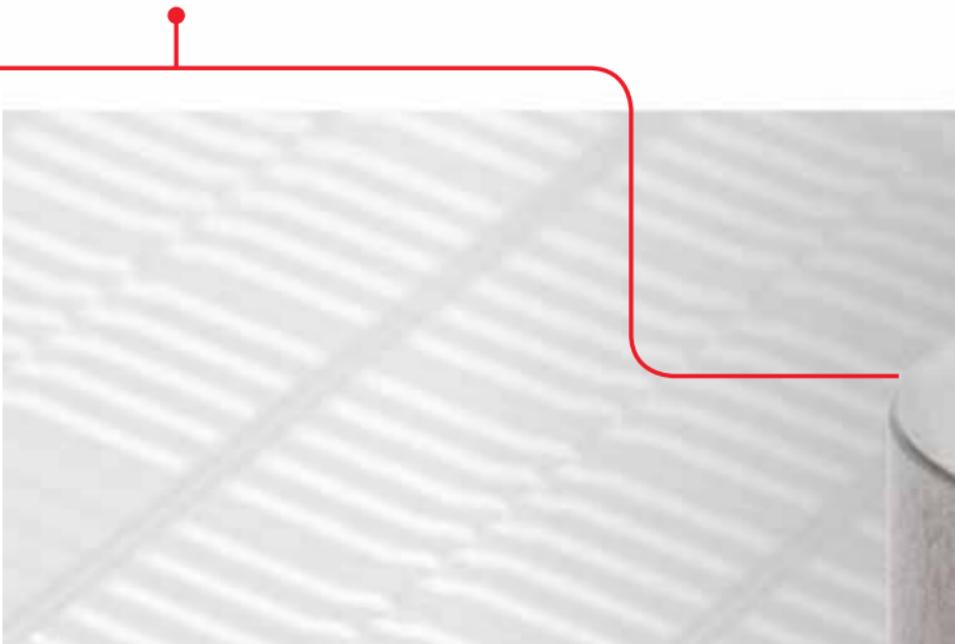
- microwiring automatically positioned and bonded to a platinum wire
- Perfect alignment in the center of the magnetic field
- All under absolute clean conditions

Optimized and reproducible quality

- Each step tightly controlled and verified
- Secures the production of each sensor

Patent pending sensor balancing process

- Laser ablation process etches off miniscule amounts of wafer coating
- Avoids complex and manual tasks under a microscope



Refined for challenging applications

Careful selection of inert materials minimizes drift and significantly improves solvent resistance.

Stretches the limits of paramagnetic oxygen measurement

- Neither glue nor solders within the core of the Magnos28
- Special coatings protect sensitive parts (for example pole shoes)
- Improved drift stability helps to realize very low measuring ranges (0 to 0.5 vol%)

Improved sensitivity at very low oxygen concentrations

- Drastically reduced moisture influence
- Response to other dia- and paramagnetic gases matches theoretical values, reducing measurement uncertainty



Fast results when every second counts

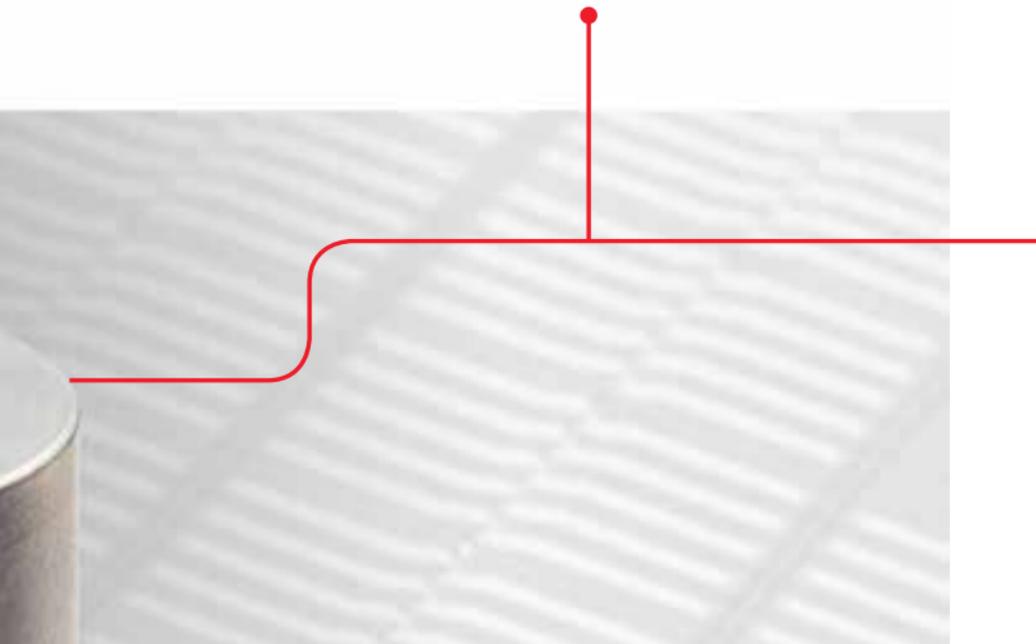
Ingenious internal gas flow management directs the process gas instantly to the highly responsive microwiring.

Up to 15% improvement in response time

- Internal chamber volume reduced by factor of three
- Completely redesigned gas paths and optimized drillings
- Results in rapid gas exchange

Special version with rise time less than 1.3 seconds

- One of the fastest among magneto-mechanical oxygen sensors
- Minimum gas flow of only 0.15 l/min required
- Perfect choice for processes with rapidly changing oxygen concentrations



Welcome to high definition measurement

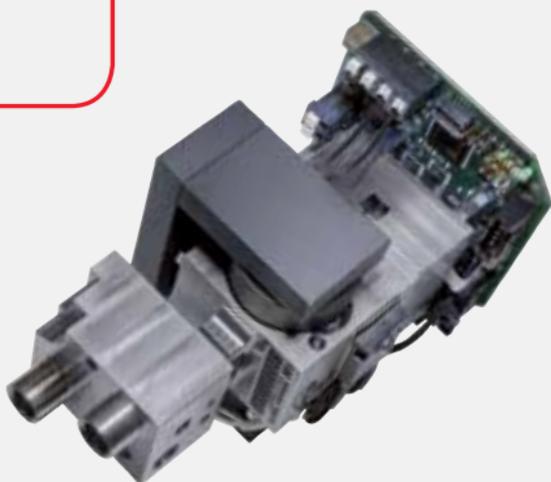
Minimizing external influences delivers resolution never seen before.

Wide dynamic range and high suppressed ranges

- Immediate 32 bit A/D conversion next to the physical sensor minimizes signal noise
- Improves performance across complete 0.5 to 100 vol% O₂ range

Reduced temperature and pressure effects

- Gas flow bypass system thermally decoupled from the sensor block
- Ensures defined internal flow and minimizes influence on detector temperature balance
- Intelligently arranged sensors detect and compensate for external influences



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