

In-situ H₂S/O₂ Analyzer

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Real-Time Cross-Duct Measurement

Special Features

- Real-time sensing
- Response time < 0.2 s
- High sensitivity - detection limit below 0.1 ppm per meter
- H₂S measuring ranges from 0 to 10 ppmv and 0 to 100 %
- O₂ measuring ranges from 0 to 1 % and 0 to 100 %
- Process temperature 0 to 250 °C [32 to 482 °F]
- Process pressure 0.5 to 2 bar
- Possible to include methane as a third gas component
- In-situ monitoring direct in process
- No sample conditioning
- Low maintenance
- Self-calibrating feature
- IP65 enclosure for all installations including use in harsh environments
- Measurement with dust loads up to 50 g/m³ possible
- Modbus or Profibus communication
- ATEX version available

Application

The in-situ H₂S/O₂ analyzer is a high-performance combined hydrogen sulphide and oxygen analyzer for industrial and potential compliance applications.

The combined hydrogen sulphide and oxygen analyzer can operate at very precise wavelengths in the:

- near-infrared (NIR),
- mid-infrared (MIR),
- infrared (IR).

The in-situ H₂S/O₂ analyzer also offers the possibility to read in pressure and temperature for compensation.

Example applications are real-time measurements for safety monitoring and process control.

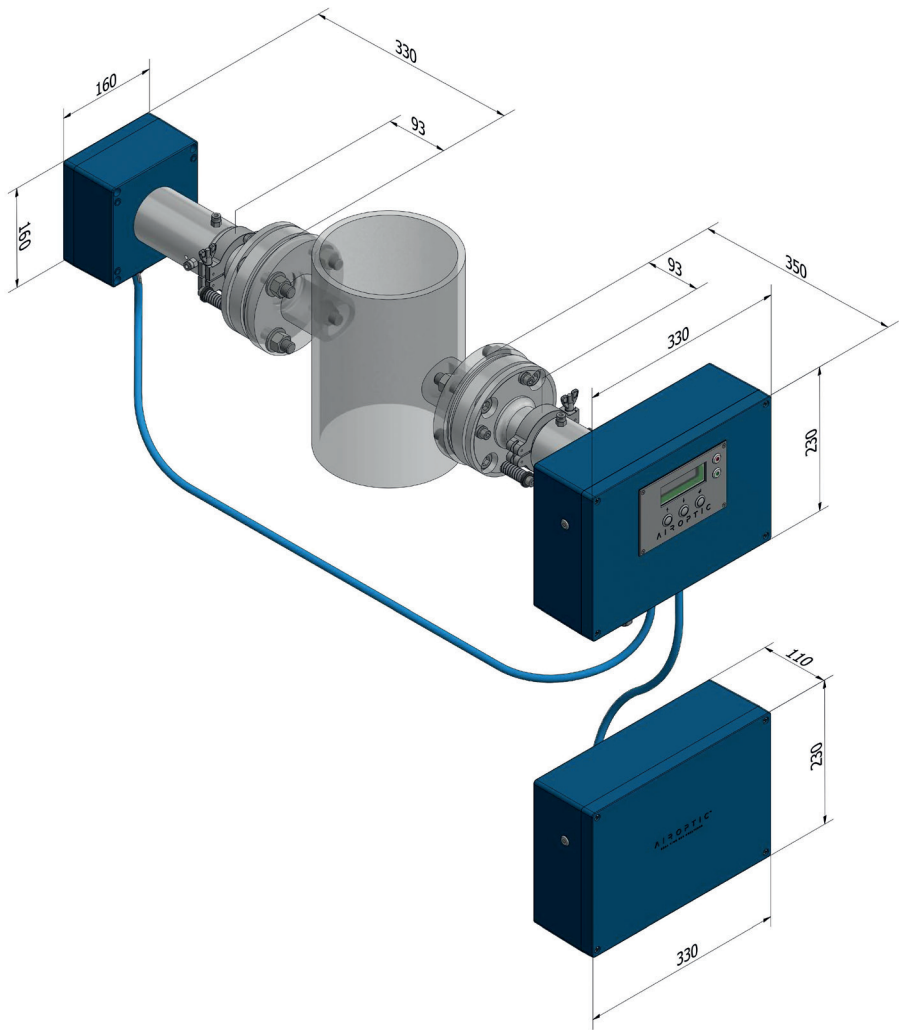
Industries that can benefit from this measurement technology are the oil, gas and petrochemical industry.

Description

The in-situ H₂S/O₂ analyzer uses selective cross-duct/stack spectroscopy to provide in-situ measurements. Its design consists of a central, transmitter and receiver unit. The transmitter unit emits laser radiation directly through the process sample gas to the detector in the receiver unit. A hybrid loop cable connects the transmitter and receiver units for signal transmission. An internal reference gas cell is used for real-time verification of the calibration status.

An integrated continuous purge air system prevents dust and other contaminants from coating the transmitter unit and receiver unit windows and defines the exact measuring path length.

The in-situ H₂S/O₂ analyzer is equipped with an operating and analysis software, it has 4-20 mA input/output signals, a Modbus or Profibus communication and can be remotely monitored via an Ethernet interface.



Dimensions in mm

Technical Data In-situ H₂S/O₂ Analyzer

| | In-situ H ₂ S/O ₂ Analyzer | |
|--|--|---|
| Gas Measured | H ₂ S | O ₂ |
| Minimum Measurement Range ¹⁾ | 0 to 10 ppmv | 0 to 1 % |
| Standard Measurement Range ¹⁾ | 0 to 100 % | 0 to 100 % |
| Limit of Detection | 1000 ppm*m at STP and 3 second response time | 100 ppm*m at STP and 3 second response time |
| Precision | 1000 ppm*m or 1 % of the measured value, whichever is larger at STP and 3 second response time | 100 ppm*m or 1 % of the measured value, whichever is larger at STP and 3 second response time |
| Accuracy | 1000 ppm*m or 2 % of the measured value, whichever is larger at STP and 3 second response time | 100 ppm*m or 2 % of the measured value, whichever is larger at STP and 3 second response time |
| Zero/Span Drift | Negligible | |
| Calibration | Certified span gas | |
| Warm-up Time | Approximately 5 minutes | |
| Minimum Response Time (T ₉₀) | 200 milliseconds | |

1) All technical specifications refer to an optical path length of 1 m and the specified temperature and pressure ranges.
If the existing process conditions deviate from the specifications of the standard applications, customer-specific solutions are available on request.

Environment and Measurement Specifications

| | In-situ H ₂ S/O ₂ Analyzer |
|--|---|
| Ambient Temperature | -20 to 55 °C [-4 to 131 °F] |
| Ambient Pressure | 800 - 1200 hPa |
| Ambient Humidity | RH < 99 %, non-condensing |
| Sample Gas Pressure | 0.5 to 2 atm |
| Sample Gas Temperature | 0 to 250 °C [32 to 482 °F] |
| Process Dust Load | Up to 50 g/m ³ (depending on process conditions) |
| Sensor and Process Purge Gas Flow Rate | 5-50 l/min |

Electrical and Safety Specifications

| | In-situ H ₂ S/O ₂ Analyzer |
|-----------------------------|---|
| Power Input | 24 V DC nominal (19-30 V DC) |
| Power Consumption | < 25 VA |
| Inputs | 4 x analog input (4-20 mA, process temperature and pressure, 2 x AUX) - easy user selection via DIP switch between active/passive mode 1 x RTD 8 x digital input |
| Outputs | 4 x analog output (4-20 mA, H ₂ S concentration, O ₂ concentration, process transmission, 1 x AUX, e.g. methane) active or passive - easy user selection via DIP switch between active/passive mode 8 x digital output (NAMUR) |
| Low Voltage Directive (LVD) | 2014/35/EU, PN-EN 61010-1:2011 |
| Laser Radiation | Laser Class 1 product acc. to PN-EN 60825-1:2014-11, CE (max. 2 mW, eye-safe) |
| EMC Directive 2014/30/EU | EN 61326-1:2013 |
| RoHS Directive | 2011/65/EU |
| ATEX Directive 2014/34/EU | Explosion-proof (standard version, installation site in general purpose area): - ATEX II 3G [Ex op is IIC T6 Gc] - ATEX II 3D [Ex op is IIIC T85°C Dc] Explosion-proof (optional version): - ATEX II 3G Ex pz op is IIC T6 Gc - ATEX II 3D Ex pz op is IIIC T85°C Dc |

Mechanical Specifications

| | In-situ H ₂ S/O ₂ Analyzer |
|-------------------------------------|--|
| Transmitter Dimensions (W x H x D) | 330 x 230 x 350 mm [13 x 9.1 x 13.8 inches] |
| Receiver Dimensions (W x H x D) | 160 x 160 x 330 mm [6.3 x 6.3 x 13 inches] |
| Central Unit Dimensions (W x H x D) | 330 x 230 x 110 mm [13 x 9.1 x 4.3 inches] |
| Transmitter Weight | 15 kg [33.1 lbs] including flange |
| Receiver Weight | 13 kg [28.7 lbs] including flange |
| Central Unit Weight | 5 kg [11 lbs] |
| Housing Material | Aluminum |
| Housing Color | RAL 5017 (other colors available on request) |
| Process Interface Material | Stainless Steel 316 |
| Degree of Protection | In accordance with IP65 |
| Process Flange | DN 50 |
| Process Windows | Sapphire window, helium leak tested and certified in accordance with EN1779:1999 norm, Maximum process pressure 16 bar |

Customer interface

User communication with the instrument is established by the following:

| | In-situ H ₂ S/O ₂ Analyzer |
|--------------------------------|--|
| Local User interface (LUI)-LCD | Local user interface (LUI) - LCD backlit display located on the transmitter housing lid. |
| Ethernet-Based | - Webserver application - system configuration and data acquisition via webbrowser - Windows-based program - data logger for real-time data acquisition |
| Remote Access | Ethernet port for remote service and diagnostics |
| Optional User Communication | PROFINET, Modbus (TCP/IP), Modbus RTU |

M&C TechGroup is Distributor of the Airoptic in-situ analyzers.
Please contact us for assistance with the Airoptic products.

▼ **M&C TechGroup Germany GmbH**

Site Ratingen

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|----------|---------------|-------------------|--------------------------------|

▼ **Additionally**

| | |
|--------------|-------------------------|
| Distributors | Various other countries |
|--------------|-------------------------|

Detailed information at ►► www.mc-techgroup.com

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 REAL TIME GAS ANALYZERS