

LaserGas™ III Single Path Oxygen Analyser

Cutting-edge technology



Key Features

Gen. 3 compact
LaserGas electronics

For operation in zone 1
and class I div 1 areas

Sub second response times

Low power < 10 Watt

Suitable for use in SIL 2 systems

No interference from other gases

Stable calibration, no zero drift

No gas sampling:
In-situ measurement

The TDLS Process Solution

NEO Monitors new oxygen analyser is specifically designed for service in hazardous areas. Based on our third generation LaserGas electronics, the entire instrument is built into compact flameproof enclosures making it fit for zone 1 and division 1 applications. The LaserGas III O₂ consists of equal transmitter and receiver units that are mounted diametrically opposite each other on stacks, ducts or reactors. The laser light will cross the process gas and concentration changes are detected in-situ and in real-time.

Fast and Reliable

The LaserGas III O₂ sets a new standard for fast and reliable TDLS analysis. The laser scans the absorption line in milliseconds. This enables overall instrument response times of 100 ms and critical oxygen concentration changes are uncovered immediately. The fully digital Gen. 3 LaserGas electronics is very power efficient. The LaserGas III O₂ is our most reliable and repeatable gas sensor with all electronics designed according to IEC 61508, SIL 2 (safety integrity level).

State of the Art Technology

NEO Monitors LaserGas is using Tuneable Diode Laser Spectroscopy (TDLS) i.e. a non-contact optical measurement method employing solid-state laser sources. Therefore, the sensor remains unaffected by contaminants and corrosives and does not require regular maintenance. The highly selective laser source scans a single gas absorption line specific to the target gas, thus eliminating cross interference from other gases.

Key Application Areas

The LaserGas III O₂ is the solution for reliable and fast measurement of oxygen in safety critical applications or in combustion control. Some of the focused applications:

- Chemical industry (inertisation control of reactors, Vinyl Chloride or PVC, Acrylic acid, solvent acid recovery, carbon black manufacture)
- Petrochemical industry (FCC Units, tail gas treatment, flare gas monitoring, vent headers of incinerators, process heaters)
- Steel industry (Coke oven gas, converter coal gas, reheating furnaces)

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Technical Data

Instrument Data

Specifications

Detection limit (O ₂)*	100 ppm **
Max. process gas temperature	1500 °C
Max. process gas pressure	10 bar abs
Optical path length	Typically 0.5 – 20 m
Response time	100 ms
Repeatability	+/- Detection limit or +/- 1% of reading, whichever is greater
Linearity	< 1%

Environmental conditions

Operating temperature	-20 °C to +55 °C (extended rating -40 °C and/or + 65 °C on request)
Storage temperature	-40 °C to + 70 °C
Protection classification	IP66

Inputs / Outputs

Analogue output (3)	4 – 20 mA current loop
Digital output	10/100 Base T Ethernet (Modbus TCP), USB, RS-485
Relay output	Optional
Analogue input	Optional 4 – 20 mA process temperature and pressure reading

Ratings

Power supply	24 VDC, range 12 – 36 VDC
Power consumption	Max. 10 W
4 – 20 mA output	500 Ohm max. isolated

Installation and Operation

Flange dimension	DN50/PN10 or ANSI 2"/150lbs (other dimensions on request)
Alignment tolerances	Flanges parallel within 1.5°
Purging of windows	Dry and oil-free pressurised air or gas, or by fan
Purge flow	10 – 50 l/min per flange (application dependent)
Calibration	Check recommended every 12 months

Security

Laser class	Class 1 according to IEC 60825-1, eye safe
CE	Certified
EMC	Conformant with directive 2004/108/EC

Approvals

ATEX	II 2 G Ex de IIC T5, II 2 D Ex tD A21 IP66 (pending)
CSA	Class I, Div. 1, Groups B, C and D (pending)
SIL	Suitable for use in SIL 2 systems

Dimension and weight

Transmitter and receiver unit (TU/RU)	200 (length) x 125 (diameter) mm, 3.5 kg each
Purge unit with window	DN50 or ANSI 2" flange, 110 mm (length), 3.5 kg
TU/RU connection box	160 x 160 x 100 mm, 2 kg

* Other gases on request

** Detection limits are specified as the 95% confidence interval for 1 m optical path and gas temperature / pressure = 25 °C / 1 bar abs.

neo monitors as

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