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Analytical Products & Solutions

SITRANS SL Gas Analyzer (TDLS)

Quick and reliable gas analysis under
extreme conditions

usa.siemens.com/laser



The SITRANS SL sets standards for in-situ process measurements in harsh operating environments.

The gas analyzer is suitable for highly sensitive oxygen measurements, and is based on the tunable diode laser spectroscopy (TDLS) measurement method. SITRANS SL works without any sampling and sample-preparation systems. It also works effectively in real time, extremely precisely, and largely free of perturbing influences by accompanying gases, dust or aerosols. The device can compensate for other influencing factors, such as pressure or temperature fluctuations. This makes the gas analyzer the ideal tool for quick, in-situ measurement of gas concentrations in process and flue gases. It is designed for use in harsh and explosive environments and reliably measures hot, dust-laden, corrosive, moist, and toxic gases. Built-in reliability and maintenance-friendliness

Drift phenomena that principally occur with diode lasers, and which can lead to a loss of measurement quality and normally make frequent inspections a necessity, are eliminated in the SITRANS SL. The use of an internal reference gas cell facilitates stable and maintenance-free operation: In the device's optical path there is a cuvette, which is filled with a reference gas that doesn't interfere with the sample gas. The reference signal is independent of the sample gas concentration and monitored simultaneously to the process measurement. This signal forms the basis of comparison for stabilizing the laser and ensures that calibrations remain valid for an extremely long time. This long lasting stability and the accompanying omission of frequent checks which would translate into downtime considerably increase availability and reduce operating costs.

Technical specifications	
Gases	O ₂
Measuring range	O ₂ : 0 ... 1 Vol% up to 0 ... 100 Vol% ²⁾
Detection limit ⁴⁾	O ₂ : 200 ppmv
Repeatability ⁴⁾	O ₂ : 1 % of the measuring range
Effective optical path length	0.3 ... 8 m
Process gas pressure/temperature	O ₂ : 900 ... 1 100 hPa / 0 ... 600 °C or 700 ... 5 000 hPa / 0 ... 200 °C
Response time (T90)	Approx. 2 s, application dependent
Power supply	24 V DC, 10 VA
Electrical connections	2 analog inputs/outputs ³⁾ 1 digital input 2 digital outputs PROFIBUS DP V0 (optional) or Modbus (optional)
Degree of protection	IP65
Flange type	DN50/PN25, DN50/PN40 or ANSI 4" Class 150

¹⁾ For information about additional gases please contact your nearest Siemens representative

²⁾ Dependent on process conditions and effective optical path length

³⁾ 4...20 mA, isolated, specified for external temperature/pressure sensors (optional use)

⁴⁾ Value at standard conditions:

- process gas temperature 25 °C (68 °F)
- process gas pressure 1000 hPa
- effective optical path length 1 m (39")
- without influence of other process gases (nitrogen atmosphere)
- no influence by dust

For application-specific data, please contact your nearest Siemens representative.

Benefits

- In-situ measurements – no sampling or sample preparation necessary
- Reference cell for self-monitoring compensates for drift phenomena and ensures stable and reliable measurement operation without frequent checks
- Dynamic compensation for factors influencing the process
- Extremely robust construction
- Quick response times
- ATEX/FM/CSA model with certification for applications with exposure to gas and dust for ex zones I and II
- Suitable for installation in SIL 1 applications pursuant to IEC 61508/IEC 61511 (for oxygen measurements)
- Expanded communication functionality integrated in the TIA platform (Totally Integrated Automation)
- Local display of process values and status, operation of the local user interface (LUI) via IR remote control
- Easy to install, user-friendly commissioning, easy operation

Applications

- Plant safety and safety at the workplace, e.g. monitoring of minimum or maximum permissible oxygen concentrations, right to so-called zero-gas monitoring
- Process monitoring and control (e.g. in the chemicals industry)
- Process optimization
- Measurements in hot, corrosive and toxic gases
- Quality control

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