

In-situ Process Gas Analyzers- SITRANS SL and LDS 6 Product Family

Overview



The SITRANS SL and LDS 6 Product Family of in-situ tunable diode lasers (TDL) for process gas analysis are designed to measure the component of interest directly in the stack, duct or process stream without any sample handling or conditioning system. The in-situ measurement technique allows the Siemens TDL to accurately measure highly reactive components like NH_3 , HF, HCl or water as well as O_2 , CO and CO_2 in extremely dirty, dusty, or corrosive samples where an extractive sampling system would quickly fail or require constant maintenance. The LDS 6 with a central control unit and fiber optically connected sensor pairs can handle up to

three channels with two components each measuring NH_3 , HF, HCl, H_2O , CO or CO_2 . The LDS 6 can also measure oxygen alone or O_2 and temperature. The highly economical one channel, one component SITRANS SL is designed to mount entirely at the sample point and measure O_2 . Both TDL's have an internal reference cell for long term stability. The LDS 6 has life time on line, continuous, automatic calibration requiring no calibration gas. The SITRANS SL requires only yearly calibration validation. Both the LDS 6 and the SITRANS SL represent Siemens continuing leadership in TDL analysis technology.

In-situ Process Gas Analyzers

Answers for industry.

SIEMENS

LDS 6

The LDS 6 is a high-performance process gas analyzer with a unique design concept and can measure gases even under extreme conditions.

Mode of Operation

The LDS 6 combines the compact and service-friendly design, simple operation and network capability of the Series 6 analyzers with the well-known exceptional performance data of in-situ gas analysis by using diode laser technology and fiber-optics. Up to three LDS 6 in-situ cross-duct sensors (which are optionally available in an intrinsically – safe version for operation in hazardous areas) can be combined with an analyzer in the compact 19" rack housing. The distance between the analyzer's control unit – typically in an existing instrument room or the process plant's control room – and the maximum three measuring points can be up to 700 meters per point.

The central unit is separated from the sensor by using fiber optics. Regardless how hostile the environment is, the analyzer can always be placed outside the hazardous area.

The very nature of the laser light allows single-line spectroscopy free of interferences. Since the bandwidth of the laser light is extraordinary small, only the gas component of interest will interact.

Applications

- Process control
- DeNOx optimization
- Combustion control
- Emission monitoring
- Filter optimization
- O₂ safety
- CO safety

Benefits

- In-situ measurements – no gas sampling required
- Built-in auto-calibration
- Dynamic dust load compensation
- Selectable range
- Three measuring points simultaneously
- High gas temperatures up to 1300°C
- Optionally available in a ATEX version according to ATEX II 1 G Ex ia IIC T4, ATEX II 1 D IP65 T135°C
- Measuring components: O₂, NH₃, HCl, HF, CO, O₂/Temp, NH₃/H₂O, HCl/H₂O, HF/H₂O, and CO/CO₂

Technical Specifications

Gas	O ₂ , NH ₃ , HCl, HF, CO, O ₂ /Temp, NH ₃ /H ₂ O, HCl/H ₂ O, HF/H ₂ O, and CO/CO ₂
Measuring range	Varies with component – consult factory
Resolution	ppm levels – For exact data, consult factory
Optical path length	0.3 – 8 m
Process gas temperature	0-1200°C depending on applications
Process gas pressure	atmospheric
Response time	2-30 seconds
Electric connections	2 analog outputs per channel 2 analog inputs per channel 6 binary outputs per channel 6 binary inputs per channel

For more information contact:
Siemens Energy & Automation, Inc.
7101 Hollister Road
Houston, TX 77040
Phone: 713-939-7400
email: saasales.sea@siemens.com

Siemens Energy & Automation, Inc.
Industry Sector
3333 Old Milton Parkway
Alpharetta, GA 30005
1-800-964-4114

info.sea@siemens.com

www.usa.siemens.com/processanalytics

Subject to change without prior notice
Order No.: PIAFL-00025-0709
Printed in USA
© 2009 Siemens Energy & Automation, Inc.

SITRANS SL

SITRANS SL sets a new benchmark with in-situ technology for process control – even under extreme measuring conditions. It offers proven technology integrated into a more compact in-situ gas analyzer design.

Mode of Operation

As a tunable diode laser-based technology this in-situ device enables high-performance measurements. The sensors (transmitter and receiver) are meant to be mounted directly on the process with no need of sampling systems. Laser light is sent from the transmitter, passing through the process gas, arriving at the detector on the receiver side. The measurements are carried out on-line with a very short response time permitting fast and effective cost-savings in process control.

The laser characteristics allow single-line spectroscopy free of interferences. Since the band width of the laser light is extremely narrow, only the gas component of interest will interact with it. Other process influences, such as dust and temperature, are easily eliminated due to the excellent inherent compensation capabilities of this technique.

An in-line referenced cell filled with a non-interfering reference gas, a further development of the already established Siemens TDL technology, provides unique user benefit in terms of minimum need for maintenance and recalibration.

Applications

- Process control (chemical industry)
- Process optimization (steel industry)
- Safety monitoring, e.g. measuring minimum or maximum concentration limit for oxygen in explosive-proof environment (refinery, chemical, steel, cement industries)
- Combustion control (boilers, municipal waste incinerators and Power Plants)

Benefits

- In-situ measurements – no gas sampling required
- In-line reference cell – stable instrument operation with outstanding performance
- Dynamic dust load compensation
- Unparalleled cost/performance ratio for single-point measurements
- Fast response time
- Low maintenance
- FM certified for Class I Div. 1
- Almost no cross interferences
- Easy to align and service

Technical Specifications

Gas	O ₂ ^①
Typical measuring range	0-30 Vol%; other ranges selectable
Detection limit ^②	0.02 Vol%
Optical path length	0.3-8 m
Process gas temperature	0-600°C
Process gas pressure	0.7-5 bar absolute (T below 200°C) 0.9 -1.1 bar absolute (T up to 600°C)
Response time	1-3s
Electric connections	2 analog I/Os, 1 digital input, 2 digital outputs, PROFIBUS DP (optional) Modbus (optional)

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

② Value at standard conditions (20° C, 1013 hPa, 1m optical path length). For application-specific data please contact your nearest Siemens representative.

The information provided in this brochure contains merely general descriptions or characteristics of performance which in case of actual use do not always apply as described or which may change as a result of further development of the products. An obligation to provide the respective characteristics shall only exist if expressly agreed in the terms of contract.

All product designations may be trademarks or product names of Siemens AG or supplier companies whose use by third parties for their own purposes could violate the rights of the owners.