

LaserGas™ II Single Path Monitor

- Data sheet



Key Features

- Response time down to one second
- No gas sampling: IN-SITU measurement
- No interference from background gases
- Stable calibration, no zero drift
- Applicable for many process conditions: High temperature, high dust, corrosive gases
- Line measurement, integral concentration over the full stack diameter
- No moving parts, no consumables
- ATEX and CSA certified
- TÜV approved technology

NEO Monitors LaserGas II Single Path (SP) Monitor is a highly reliable gas analyser for true continuous in-situ monitoring. Single Path Monitors are designed for measurements across stacks, ducts, and reactors with typical path lengths of 0.5 – 20 m. By-pass and extractive configurations are also possible. The SP Monitor utilizes a transmitter / receiver configuration to measure the average gas concentration along the optical line-of-sight.

State of the Art Technology

NEO Monitors LaserGas is using Tunable Diode Laser Absorption Spectroscopy (TDLAS) 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 absence of extractive conditioning systems further improves availability of the measurement and eliminates errors related to sample handling.

Easy Installation

The monitor is mounted directly onto DN50 or ANSI 2" flanges, which include

purge gas connections and a tilting mechanism for easy alignment. A continuous purge flow will prevent dust and other contamination from settling on the optical windows. Once power and data lines are connected, measurements are performed in real-time.

Key Application Areas

With **market experience since 1995** and an installed base of more than 3000 LaserGas analysers, we offer our customers a long-term experience from many challenging applications:

- Chemical industry (inertisation control of reactors, Vinyl Chloride or PVC, Acrylic acid, solvent acid recovery, carbon black etc.)
- Petrochemical industry (FCC Units, tail gas treatment, flare gas monitoring, sulphur recovery, vent headers of incinerators etc.)
- Steel industry (Coke oven gas, converter coal gas, reheating furnaces)
- Power plants (boiler control, DeNOx - ammonia slip control, economiser)
- Waste incineration, cement plants, aluminium smelters (emission monitoring)

Table of Principal Gases

Gas	Detection limit [ppm]	Max temp. [°C]	Max pressure [bar abs]
NH ₃	0.15	600	2
HCl	0.05	600	2
HF	0.015	400	2
H ₂ S	3	300	2
O ₂	100	1500	20
% H ₂ O	50	1500	2
ppm H ₂ O	0.1	400	2
% CO	30	1500	2
% CO ₂	30	1200	2
ppm CO	0.3	1500	2
ppm CO ₂	0.2	300	2
NO	10	300	2
N ₂ O	1	200	2
CH ₄	0.2	300	3

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

Also available are HCN, NO₂, C₂H₂, C₂H₄, C₃H₆, CH₃I, CH₂O, CH₂CHCl (VCM), C₂H₅O (EtO), CH₂Cl₂ (DCM), HBr, and HI.

Dual Gas: NH₃+H₂O, HCl+H₂O, HF+H₂O, CO+CO₂, CO+H₂O, CO+CH₄, O₂+temp, CO+temp

Higher pressures may be available on request for certain gases. Please contact us!

Instrument data

Specifications

Optical path length	typically 0.5 – 20 m
Response time	1 – 2 sec
Averaging time	Rolling average from 2 seconds to 24 hours (exp. decay)
Repeatability	+/- Detection limit or +/- 1% of reading, whichever is greater
Linearity	< 1%

Environmental conditions

Operating temperature	-20 °C to +55 °C (special version up to +65 °C on request)
Storage temperature	-20 °C to +55 °C
Protection classification	IP66

Inputs / Outputs

Analogue output (3)	4 – 20 mA current loop
Digital output	RS – 232 format, Optional 10 or 10/100 Base T Ethernet, Optional fibre optic (ASCII – format)
Relay output (3)	High gas-, Maintenance-, Warning - and Fault relays (normally closed-circuit relays)
Analogue input	4 – 20 mA process temperature and pressure reading

Ratings

Input power supply unit	100 – 240 VAC, 50/60 Hz, 0.36 – 0.26 A
Output power supply unit	24 VDC, 900 – 1000 mA
Input transmitter unit	18 – 36 VDC, max. 20 W
4 – 20 mA output	500 Ohm max. isolated
Relay output	1 A at 30 V DC/AC

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)

Maintenance

Visual inspection	Recommended every 6 – 12 months (no consumables needed) Remote instrument check by Ethernet connection or external modem possible
Calibration	Check recommended every 12 months
Validation	In-situ span and zero check with optional internal cell (EN 14181 compliant)

Security

Laser class	Class 1 according to IEC 60825-1
CE	Certified, conformant with LVD 73/23/EEC, including 93/68/EEC
EMC	Conformant with directive 2004/108/EC

Explosion protection (optional)

ATEX zone 1	II 2 G Ex px op is Gb II T4, II 2 D Ex pD 21 IP 66 T64°C
ATEX zone 2	II 3 G Ex nA nC op is Gc IIC T4, II 3 D Ex td A22 IP65 T100°C
CSA	Class I, Div. 2, Groups A, B, C and D; Temp. Code T4; non-incendive

Dimension and weight

Transmitter unit	405 (plus 65 for purge unit) x 270 x 170 mm, 6.2 kg
Transmitter unit (Ex version)	405 (plus 65 for purge unit) x 270 x 310 mm, 7.9 kg
Receiver unit	355 (plus 65 for purge unit) x 125 x 125 mm, 3.9 kg
Power supply unit	180 x 85 x 70 mm, 1.6 kg

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