neo monitors
Experience - the Difference

LaserGas™ II Open Path Monitor

- Data sheet

Key Features

- Unaffected by dust, fog, or rain down to 1% transmission
- Up to 1000 m measurement path
- No cross interference from moisture (or other gases)
- Stable calibration, no zero drift
- Low cost of ownership: No moving parts, no consumables
- ATEX and CSA certified

NEO Monitors LaserGas II Open Path (OP) Monitor is a compact, high performance gas analyser for long distance monitoring in ambient air. Measurement lengths up to 1000 m one way are possible. The OP Monitor utilizes a transmitter / reflector configuration to measure the average gas concentration along the optical line-of-sight. As option a portable, battery-powered version is available containing a control keypad and a flash memory for data logging.

State of the Art Technology

NEO Monitors LaserGas is using Tuneable 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. Gases are easily measured over different path lengths by entering the selected distance (automatic phase correction included in HW).

Easy Installation

The monitor is installed on our proprietary x/y alignment platform (goniometer). Adapters for fixed installation on platforms or for tripod use are available. The instrument also includes a visible aiming laser and sighting optics for easy alignment even over long distances. Hoods for protection of the optical windows on transceiver and reflector side can be supplied. 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:

- Aluminium smelters (HF emission monitoring, gas fence line)
- Petrochemical industry (HF leak detection in alkylation plants, gas fence line e.g. CH_4, H_2S,)
- Semiconductor industry (monitoring HF, NH_3, HCl in clean rooms)
- Power plants (detection of smouldering fires in coal bunkers)
- Monitoring of traffic exhaust
- Monitoring of green house gases in agriculture (e.g. NH_3, CH_4, N_2O)

Technical Data LaserGas™ II OP

Table of Principal Gases

Gas	Detection limit [ppb]
NH_3	10
HCl	5
HF	1
H_2S	200
CO	30
N_2O	150
CH_4	10

NOTE: Detection limits are specified as the 95% confidence interval for 100 m optical path (one way) and gas temperature / pressure = 25 ^{O}C / 1 bar abs.

Also available: CO_2, HCN, C_2H_2, C_2H_4, C_3H_6, CH_3I, CH_2O, CH_2CHCl (VCM), C_2H_4O (EtO), CH_2Cl_2 (DCM)

Dual Gas: NH_3+H_2O, HCl+H_2O, HF+H_2O, CO+H_2O, CH_4+CO_2

Instrument data

Specifications	
Optical path length	up to 1000 m (one way)
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 ^{O}C to +55 ^{O}C
Storage temperature	-20 ^{O}C to +55 ^{O}C
Protection classification	Transceiver unit IP66, retro-reflector and battery unit IP65
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
Internal memory (optional)	8 MB flash memory (sufficient for 24 h logging at 60 sec averaging time)
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
Battery supply unit (optional)	input: 90-264 VAC, 50/60 Hz output: 24 VDC, fused 1 A
Installation and Operation	
Installation	Special X/Y alignment platform or tripod
Alignment tolerances	Typically +/- 1 m RAD deviation (application dependent)
Purging of windows	Optional: Dry and oil-free pressurised air or gas, or with fan
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
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	
Transceiver unit	500 x 270 x 180 mm, 6.5 kg
Transceiver unit (EEx P version)	500 x 270 x 320 mm, 8.2 kg
Retro reflector unit	Size depends on number of reflectors, e.g. 400 x 200 x 400 mm, 13 kg for 9 reflectors
Power supply unit	180 x 85 x 70 mm, 1.6 kg
Battery supply (optional))	280 x 160 x 125 mm, 6.9 kg

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