

# neo monitors as

Experience is 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 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. 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 (goniome-

ter). 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 2000 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<sub>4</sub>, H<sub>2</sub>S,)
- Semiconductor industry (monitoring HF, NH<sub>3</sub>, 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<sub>3</sub>, CH<sub>4</sub>, N<sub>2</sub>O)

## Table of Principal Gases

| Gas              | Detection limit [ppb] |
|------------------|-----------------------|
| NH <sub>3</sub>  | 10                    |
| HCl              | 5                     |
| HF               | 1                     |
| H <sub>2</sub> S | 200                   |
| CO               | 30                    |
| N <sub>2</sub> O | 150                   |
| CH <sub>4</sub>  | 10                    |

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

Also available: CO<sub>2</sub>, HCN, C<sub>2</sub>H<sub>2</sub>, C<sub>2</sub>H<sub>4</sub>, C<sub>3</sub>H<sub>6</sub>, CH<sub>3</sub>I, CH<sub>2</sub>O, CH<sub>2</sub>CHCl (VCM), C<sub>2</sub>H<sub>4</sub>O (EtO), CH<sub>2</sub>Cl<sub>2</sub> (DCM)

Dual Gas: NH<sub>3</sub>+H<sub>2</sub>O, HCl+H<sub>2</sub>O, HF+H<sub>2</sub>O, CO+H<sub>2</sub>O, CH<sub>4</sub>+CO<sub>2</sub>

## 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 °C to +55 °C   |
| Storage temperature       | -20 °C to +55 °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)<br>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  |
| EMC         | Conformant with LVD 73/23/EEC, including 93/68/EEC |

### Explosion protection (optional)

|             |   |
|-------------|---|
| ATEX zone 1 | II 2 GD T64°C EEx px II T5  |
| ATEX zone 2 | II 3 GD T100°C Ex nA nC II T5                                       |
| 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 (Ex 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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