

# LaserGas™ II Multipass Monitor

- Data sheet



## Key Features

- Short response time (typically 2 - 10 sec)
- Very low detection limits (ppb for most gases)
- No interference from background gases
- Stable calibration, no zero drift
- Offline gas analysis in controlled environment
- No moving parts, no consumables, turn-key instrument
- ATEX and CSA certified



NEO Monitors LaserGas II Multipass (MP) Monitor employs a multipass cell concept to combine long measurement path lengths with a compact analyser design. The long path will enhance the detection limit. Thus, the MP is the analyser of choice for measurement of trace levels of gases, offline in a controlled environment. We offer this analyser as cabinet or 19" rack version. Heated and non-heated cells with different volume and path length are available.

### 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 laser beam is coupled into a so-called Herriott cell, where it is reflected multiple times between two spherical mirrors in order to enhance the analyser sensitivity.

### Easy Installation

The MP monitor is a turn-key instrument. No other operations than connecting power, sample gas tubes and optional

purge are required during installation. To avoid fouling of optical parts in the Multipass cell the cleanliness of the sample gas must be ensured. Filtering the sample gas in an appropriate extractive system may be required for some applications.

### 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 (e.g. trace moisture in olefin reactors etc.)
- Petrochemical industry (contaminants like H<sub>2</sub>S in natural gas)
- Industrial gas (impurities in pure gases)
- Semiconductor industry (contaminants in reactive gases)
- Power plants (stack testing of corrosive emission gases)
- H<sub>2</sub>S emission monitoring (pulp & paper, refineries, biogas production)

## Table of Principal Gases

Gas	Detection limit
O <sub>2</sub>	3 ppm
H <sub>2</sub> O	10 ppb
H <sub>2</sub> S	0.3 ppm
CH <sub>4</sub>	20 ppb
CO	50 ppb
CO <sub>2</sub>	50 ppb
NO	1.5 ppm
N <sub>2</sub> O	0.5 ppm
NH <sub>3</sub>	20 ppb
HCl	5 ppb
HF	2 ppb

NOTE: Detection limits are specified as the 95% confidence interval for the standard 11 m cell and gas temperature / pressure = 25 °C / 1 bar abs.

Also available are HCN, NO<sub>2</sub>, 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), HBr, and HI.

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

## Instrument data

### Specifications

Optical path length	0.6 – 12 m (depends on cell version)
Response time	typically 2 – 10 sec (depending on cell and sample gas flow)
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	IP65 (Cabinet), IP20 (19" Rack)

### 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

Gas inlet / outlet	6 mm or 1/4 " Swagelock (other dimensions on request)
Sample gas flow	recommended 5 – 10 l/min
Sample inlet pressure	0.2 – 2.0 Bar abs (2.9 – 29 PSIA)
Purging of laser chamber (optional)	Dry and oil-free pressurised air or gas, Nitrogen for O <sub>2</sub> and H <sub>2</sub> O applications
Purge flow	maximum 0.5 l/min

### 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 2	Note: Only for Cabinet version 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

Cabinet version	500 x 510 x 215 mm, 18.4 kg
19" Rack version	480 x 480 x 135 mm, 10 – 14 kg (dependent on measurement cell)

**neo monitors as**

A subsidiary of Norsk Elektro Optikk

Solheimveien 62A, P.O.Box 384

N-1471 Lørenskog, Norway

Phone +47 67974700. Fax +47 67974900

Your local distributor: