

# SERVOTOUGH Laser (2900)

## LASERGAS™ II SERIES

High performance cross stack monitors designed for a variety of emissions monitoring and process control applications in a diverse range of industries.

- Continuous *in situ* monitoring
- Low detection limits
- Response times down to 2 second
- Minimal cross interference to other gases
- Utilising the proven tuneable diode laser (TDLAS) measurement technique
- High temperature & high pressure operation possible
- Suitable for high dust applications
- Ethernet connectivity option
- Low cost of ownership



## Specification

Component	Detection Limit	Minimum Measuring range	Max. Sample Pressure	Max. Sample Temperature/°C
NH <sub>3</sub>	0.11mg/m <sup>3</sup> (0.15ppm)	0 - 15ppm	2 bar abs.	500
HCl	0.08mg/m <sup>3</sup> (0.05ppm)	0 - 5ppm	2 bar abs.	400
HF	0.013mg/m <sup>3</sup> (0.015ppm)	0 - 1.5ppm	2 bar abs.	400
H <sub>2</sub> S	4.5mg/m <sup>3</sup> (3ppm)	0 - 300ppm	2 bar abs.	300
O <sub>2</sub>	0.01%	0 - 1%	20 bar abs.	1500
H <sub>2</sub> O	0.024mg/m <sup>3</sup> (0.03ppm)	0 - 3ppm	2 bar abs.	1500
CO	38mg/m <sup>3</sup> (30ppm)	0 - 3000ppm	2 bar abs.	1500
CO <sub>2</sub>	59mg/m <sup>3</sup> (30ppm)	0 - 3000ppm	2 bar abs.	1500
CO (low conc)	0.4mg/m <sup>3</sup> (0.3ppm)	0 - 30ppm	2 bar abs.	300
CO <sub>2</sub> (low conc)	0.4mg/m <sup>3</sup> (0.2ppm)	0 - 20ppm	2 bar abs.	300
NO	20mg/m <sup>3</sup> (15ppm)	0 - 1500ppm	2 bar abs.	300
N <sub>2</sub> O	10mg/m <sup>3</sup> (5ppm)	0 - 500ppm	2 bar abs.	200
HCN	0.36mg/m <sup>3</sup> (0.3ppm)	0 - 30ppm	2 bar abs.	300
CH <sub>4</sub>	0.14mg/m <sup>3</sup> (0.2ppm)	0 - 20ppm	3 bar abs.	300
C <sub>2</sub> H <sub>2</sub>	0.12mg/m <sup>3</sup> (0.1ppm)	0 - 10ppm	2 bar abs.	200
C <sub>3</sub> H <sub>6</sub>	0.01%	0 - 1%	3 bar abs.	200
CH <sub>3</sub> I	9mg/m <sup>3</sup> (3ppm)	0-300ppm	2 bar abs.	200
CH <sub>3</sub> OH	0.05%	0 - 5%	2 bar abs.	200
NH <sub>3</sub> + H <sub>2</sub> O	0.15mg/m <sup>3</sup> (0.2ppm NH <sub>3</sub> ) / 0.05% H <sub>2</sub> O*	0 - 20ppm / 0 - 5%	1.5 bar abs.	500
HCl + H <sub>2</sub> O	0.16mg/m <sup>3</sup> (0.1ppm HCl) / 0.05% H <sub>2</sub> O*	0 - 10ppm / 0 - 5%	1.5 bar abs.	400
HF + H <sub>2</sub> O	0.018mg/m <sup>3</sup> (0.02ppm HF) / 0.01% H <sub>2</sub> O*	0- 2ppm / 0 - 1%	1.5 bar abs.	400
CO + CO <sub>2</sub>	0.01% (both)	0 - 1% /0-1%	1.5 bar abs.	300

Detection limits are specified for 1m optical pathlength and gas temperature/pressure = 25°C / 1 bar abs (\* H<sub>2</sub>O specified at 180°C). The recommended minimum range is the detection limit multiplied by 100. Other gases such as NO<sub>2</sub>, C<sub>2</sub>H<sub>4</sub>, C<sub>2</sub>H<sub>6</sub>, HBr, and HI are available on request.

## Performance:

Technology:	Single Line Laser Diode Spectroscopy.
Optical path:	Typically 0.5 - 15 meters.
Response Time:	< 2 Seconds.
Zero Drift:	<2% of measuring range/ 6 months.
Span Drift:	<4% of measuring range/ 6 months.
Averaging Time:	Rolling average from 2 seconds to 24 hours (exponential decay).
Calibration:	Check recommended every 6 - 12 months. In situ with integral flow through cell, or ex-situ using optional calibration cell.
Maintenance:	Recommended every 6 - 12 months. Remote instrument check possible via optional Ethernet or modem connection.

## Signal Inputs/Outputs

Analogue Output:	Isolated 4-20mA current loop (500 ohms maximum). Second 4-20mA current loop (500 ohms maximum) for transmission reading (optional).
Serial Output:	RS232 format (for PC connection during installation/maintenance).
Digital communications:	10 or 10/100 Base T Ethernet (Optional).
Optical fibre Output:	ASCII format (Optional).
Relay Output:	High gas relay (normally closed contact), 1A at 30 V DC/AC. Warning relay (normally closed contact), 1A at 30 V DC/AC. Fault relay (normally closed contact), 1A at 30 V DC/AC.
Analogue Input:	4-20mA process temperature and pressure sensors (Optional).

## Power supply unit:

Input:	100-240 VAC, 50/60 Hz, 0.36 - 0.26 A.
Output:	24VDC, 900 - 1000 mA.
Transmitter unit input:	18 - 36 VDC, max. 20W.

## Mounting:

Standard mounting:	DN50/PN10 (Optional DN80 or ANSI).
Alignment Tolerances:	Flanges parallel within 1.5°.
Window Purging:	Dry and oil free air or N <sub>2</sub> (application dependent).
Purge flow:	20-50 litres/min (application dependent).


## Operating Environment:

Operating temperature:	-20°C to +55°C.
Storage temperature:	-20°C to +55°C.

## Protection Classification:

IP66

## Area Classification:

Safe Area (standard).  
Optional: ATEX  II 2 GD T64°C EEx p II T5. Tamb: 55°C.  
ATEX category 2 EEx-p (purged/pressurised), with suitable purge control system.  
Group: G, D. (Gases, vapours and dust)  
Temperature Class: T5 (100°C)

## Laser Class:

Class 1 according to IEC 60825-1.

## EC Directive Compliance:

2900 LaserGas™ II complies with the Low Voltage Directive 73/23/EEC and the EMC standard EN 61000-6-2(3). The 2900 LaserGas II also conforms to the harmonised European standards for product safety (EN 61010-1) and electromagnetic compatibility (EN 61326-1).

## Dimension and Weight:

Transmitter unit	350 x 270 x 170 mm, 6.2 kg
Transmitter unit (EEx P version)	350 x 270 x 310 mm, 7.9 kg
Receiver unit	350 x 120 x 120 mm, 3.9 kg
Power supply unit	180 x 85 x 70 mm, 1.6 kg

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## Our partners

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