



SERVOTOUGH Laser

The SERVOTOUGH Laser is a high performance single path (in-situ), or extractive gas monitor, designed for a variety of emissions monitoring and process control applications in a diverse range of industries.

It offers an effective technology for use in hot, dusty or highly corrosive applications in refineries, natural gas, petrochemical, IG, power and chemical plants. We offer expert advice on techniques and installation for the SERVOTOUGH Laser, which can achieve low level measurements with minimal cross-interference.

FEATURES

- Stable calibration with low drift
- Continuous in-situ monitoring
- Low detection limits
- Fast response times, typically less than 2 seconds
- Minimal cross interference to other gases
- Utilises the proven tuneable diode laser (TDLAS) measurement technique
- High temperature and high pressure operation possible
- Suitable for high dust applications
- Ethernet connectivity option
- European and North American approvals pending
- Low cost of ownership

APPLICATIONS

- Combustion
- Thermal Oxidisers
- Emissions
- Waste Incinerators

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KEY FEATURES

The SERVOTOUGH Laser is a highly reliable gas monitor, designed for continuous in-situ measurement.

Single path monitors are designed for measurement across stacks, ducts, and reactors typically employing path lengths of 0.5 -15m. By-pass and extractive configurations are also possible.

The SP monitor utilises a transmitter/receiver configuration to measure the average gas concentration along the optical line-of-sight.

EC DIRECTIVE COMPLIANCE

SERVOTOUGH Single Path

Laser class

CE

EMC

Class 1 according to IEC 60825-1

Certified

Conforms to LVD 73/23/EEC, including 93/68/EEC
EN 61000-6-2(3)

SERVICE & SUPPORT

For new installations and replacement of older Servomex and competitor products, we will work with you to develop a bespoke service and support package, ensuring full measurement availability and plant operation within your timescales and budget.

SERVOSPARES

To ensure the integrity and optimum performance of your Servomex product, we recommend fitting only factory authorised spare parts. This is particularly important for all hazardous area certified products.

SERVOSURE

Ensure your Servomex analyser is properly commissioned and delivers optimum performance with a maintenance contract, service programme and extended warranty.

SERVOTECH

Make the most of your Servomex gas analyser by attending a training course at one of our training centres in Europe, USA or Asia or on your own site.

SERVOHELP

Whether you have a simple question or complex process challenge, our local offices and global support network are here to help you.

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SPECIFICATIONS

GAS MEASURED:

	Detection Limit	Min. Measuring range	Max. Sample Pressure	Max. Sample Temperature/°C
NH ₃	0.11mg/m ³ (0.15ppm)	0 - 15ppm	2 bar abs.	600
HCl	0.08mg/m ³ (0.05ppm)	0 - 5ppm	2 bar abs.	600
HF	0.013mg/m ³ (0.015ppm)	0 - 1.5ppm	2 bar abs.	400
H ₂ S	4.5mg/m ³ (3ppm)	0 - 300ppm	2 bar abs.	300
O ₂	0.01%	0 - 1%	20 bar abs.	1500
H ₂ O (ppm)	0.08mg/m ³ (0.1ppm)	0 - 10ppm	2 bar abs.	400
H ₂ O (%)	40mg/m ³ (50ppm)	0 - 5000ppm	2 bar abs.	1500
CO (%)	38mg/m ³ (30ppm)	0 - 3000ppm	2 bar abs.	1500
CO ₂ (%)	59mg/m ³ (30ppm)	0 - 3000ppm	2 bar abs.	1200
CO (ppm)	0.4mg/m ³ (0.3ppm)	0 - 30ppm	2 bar abs.	1500
CO ₂ (ppm)	0.4mg/m ³ (0.2ppm)	0 - 20ppm	2 bar abs.	300
NO	14mg/m ³ (10ppm)	0 - 1000ppm	2 bar abs.	300
N ₂ O	2mg/m ³ (1ppm)	0 - 100ppm	2 bar abs.	200
HCN	0.36mg/m ³ (0.3ppm)	0 - 30ppm	2 bar abs.	300
CH ₄	0.14mg/m ³ (0.2ppm)	0 - 20ppm	3 bar abs.	300
C ₂ H ₂	0.12mg/m ³ (0.1ppm)	0 - 10ppm	2 bar abs.	200
C ₃ H ₆	0.01%	0 - 1%	3 bar abs.	200
CH ₃ I	9mg/m ³ (3ppm)	0-300ppm	2 bar abs.	200
NH ₃ + H ₂ O	0.15mg/m ³ (0.2ppm NH ₃) / 0.05% H ₂ O*	0 - 20ppm / 0 - 5%	1.5 bar abs.	500
HCl + H ₂ O	0.16mg/m ³ (0.1ppm HCl) / 0.05% H ₂ O*	0 - 10ppm / 0 - 5%	1.5 bar abs.	400
HF + H ₂ O	0.018mg/m ³ (0.02ppm HF) / 0.01% H ₂ O*	0 - 2ppm / 0 - 1%	1.5 bar abs.	400
CO + CO ₂	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 (* H₂O specified at 180°C). The recommended minimum range is the detection limit multiplied by 100. Other gases such as NO₂, C₂H₄, C₂H₆, 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 (application dependent), 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)

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POWER SUPPLY UNIT:

Input:	100-240 VAC, 50/60 Hz, 0.36 - 0.26 A
Standard mounting:	DN50/PN10 (optional DN80 or ANSI)
Alignment tolerances:	Flanges parallel within 1.5°
Window purging:	Dry and oil free air or N ₂ (application dependent)
Purge flow:	20-50 litres/min (application dependent)

OPERATING ENVIRONMENT:

Operating temperature:	-20°C to +55°C - for higher temperature operations please contact Servomex
Storage temperature:	-20°C to +55°C
Protection classification:	IP66
Area classification:	Safe Area (standard)
EC Directive:	SERVOTOUGH Laser complies with the Low Voltage Directive 73/23/EEC and the EMC standard EN 61000-6-2(3). The SERVOTOUGH Laser also conforms to the harmonised European standards for product safety (EN 61010-1) and electromagnetic compatibility (EN 61326-1)

Dimensions (HxWxD) & weights

Transmitter unit	284 x 263 x 198mm	13.15kg
Receiver unit	255 x 127 x 90mm	4.9kg

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