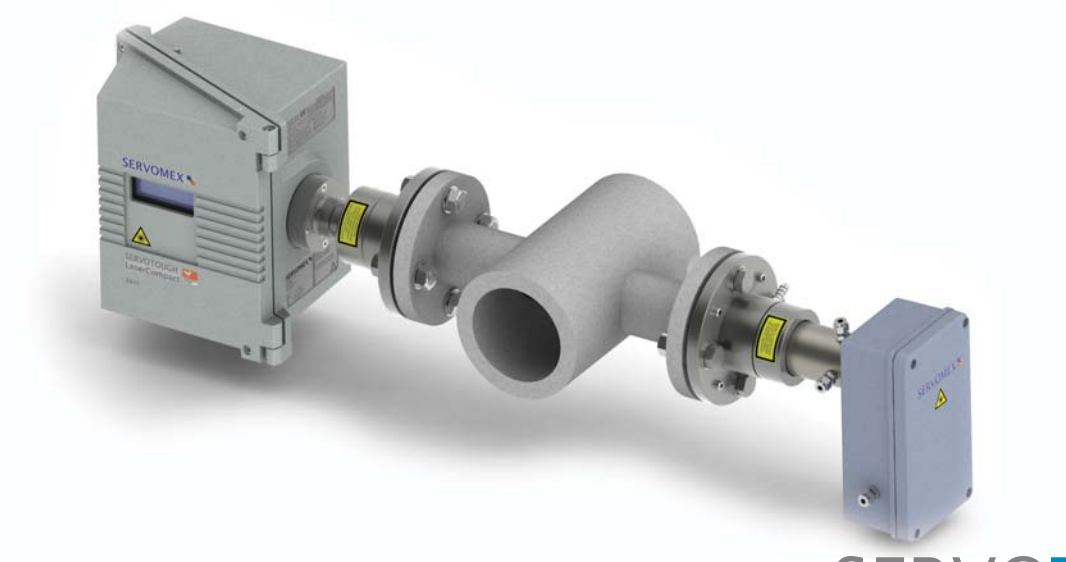
SERVOMEX
PROCESS ANALYZERS



SERVOTOUGH LaserCompact

The SERVOTOUGH LaserCompact is a reliable gas monitor for true continuous in-situ monitoring. SERVOTOUGH Compact Monitors are optimized for short distance measurement across pipes and along short cells. Due to its focused laser beam the SERVOTOUGH LaserCompact can measure through very thin nozzles, reducing purge gas consumption.

The monitor is certified to the latest standards, fully meeting the requirements of the new flammable sample regulations, allowing safe operation in situations where the process stream itself is flammable.

KEY APPLICATIONS

- Chemical industry (inertization control of reactors, trace moisture in chlorine e.g. in Chloro-Alkali plants, trace moisture in olefin reactors etc.)
- Petrochemical industry (contaminants in natural gas, moisture in H_2 recycle gas, contaminants in high purity bulk gases etc.)
- Car industry (engine test stands)
- Non-contact analysis of corrosive, dusty, tarry, or sooty gases across pipes (e.g. cement plants, metallurgical industry etc.)

KEY FEATURES

- Response time <2 sec
- No gas sampling in-situ measurement
- Minimal interference from background gases
- Stable calibration, no zero drift
- Applicable for measurement across pipes down to 10cm diameter
- Low cost of ownership
- ATEX and IECEx certified
- North American approvals pending
- TÜV approved technology
- Fully compliant with new flammable sample regulations

STATE OF THE ART TECHNOLOGY

Tuneable Diode Laser Absorption Spectroscopy (TDLAS) is 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 absence of extractive conditioning systems further improves availability of the measurement and eliminates errors related to sample handling.

EASY INSTALLATION

The monitor is mounted directly onto measurement cells or DN50 / ANSI 2" flanges. The latter include purge gas connections and a tilting mechanism for easy alignment. A continuous purge flow will prevent dust and other contamination from settling on the optical windows. Once power and data lines are connected, measurements are performed in real-time.

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SERVOTOUGH LaserCompact

KEY FEATURES

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

The monitor is designed for direct installation across stacks, ducts, and reactors typically employing shorter path lengths. By-pass and extractive configurations are also possible.

The monitor utilises a transmitter/receiver configuration to measure the average gas concentration along the optical line-of-sight,for flammable and non-flammable gas streams.

HAZARDOUS AREA	ATEX	ATEX & IECEx	HAZARDOUS PROCESS
Gas	Ex II3(2) G	Ex nA nC op is IIC T4 Gc [Ex op is IIC T4 Gb]	Gas
Gas	Ex II3G (1D)	Ex nA nC op is IIC T4 Gc [IIIB T135°C Da]	Dust
Dust	Ex II 2D(2G)	Ex tb IIIB IP66 T135°C Db [Ex op is IIC T4 Gb]	Gas
Dust	Ex II 2(1) D	Ex tb IIIB IP66 T135°C Db [IIIB T135°C Da]	Dust

Notes
1. For process flange temperature up to 135°C

COMPLIANCE

SERVOTOUGH LaserCompact:
Laser Class 3R according to IEC 60825-1
EC Low Voltage Directive
EC EMC Directive
IECEx and EC ATEX Directive

SERVICE & SUPPORT

For new installations and replacement of older Servomex and competitor products, we will work with you to develop a customized 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 authorized spare parts. This is particularly important for all hazardous area certified products.

SERVOSURE
Ensure your Servomex analyzer is properly commissioned and delivers optimum performance with a maintenance contract, service program and extended warranty.

SERVOTECH
Make the most of your Servomex gas analyzer by attending a training course at one of our training centers 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.

SERVOTOUGH LaserCompact

SPECIFICATIONS

GAS MEASURED:

	Detection Limit	Min. Measuring range	Max. Sample Pressure *	Max.Sample Temperature/°C
NH_3	0.15ppm (0.11mg/m^3)	0 - 15ppm	2 bar abs.	600
HCl	0.05ppm (0.08mg/m^3)	0 - 5ppm	2 bar abs.	600
HF	0.015ppm (0.013mg/m^3)	0 - 1.5ppm	2 bar abs.	400
H_2S	3ppm (4.5mg/m^3)	0 - 300ppm	2 bar abs.	300
O_2	100ppm	0 - 1%	20 bar abs.	600**
H_2O (ppm)	0.1ppm (0.08mg/m^3)	0 - 10ppm	2 bar abs.	400
H_2O (%)	50ppm (40mg/m^3)	0 - 5000ppm	2 bar abs.	600**
CO (%)	30ppm (38mg/m^3)	0 - 3000ppm	2 bar abs.	600**
CO_2 (%)	30ppm (59mg/m^3)	0 - 3000ppm	2 bar abs.	600**
CO (ppm)	0.3ppm (0.4mg/m^3)	0 - 30ppm	2 bar abs.	600**
CO_2 (ppm)	0.2ppm (0.4mg/m^3)	0 - 20ppm	2 bar abs.	300
NO	10ppm (14mg/m^3)	0 - 1000ppm	2 bar abs.	300
N_2O	1ppm (2mg/m^3)	0 - 100ppm	2 bar abs.	200
CH_4	0.2ppm (0.14mg/m^3)	0 - 20ppm	3 bar abs.	300

Notes:

1. Detection limits are specified as the 95% confidence interval for 1m optical path and gas temperature/pressure = to 25˚C/1 bar abs.
2. Other gases available are HCN, NO_2, C_2H_2, C_2H_4, C_3H_6, CH_3I, CH_2O, CH_2CHCl (VCM), C_2H_4O (EtO), CH_2Cl_2 (DCM), HBr and HI.
3. Dual gas measurements available are NH_3+H_2O, HCl+H_2O, HF+H_2O, CO+CO_2, CO+H_2O, CO+CH_4, O_2+temp, CO+temp.
4. Pressures quoted are spectroscopic limits for the LaserCompact. ATEX and IEC Ex certified products will be limited to 1.1 bar abs maximum process pressures for flammable samples.
5. * Higher pressures are available on some gas measurements - please contact Servomex.
6. ** Higher temperatures on request - please contact Servomex.

PERFORMANCE:

Technology:	Single Line Laser Diode Spectroscopy
Optical path:	0.1 - 1.0 meters
Response time:	<2 Seconds
Drift:	Application dependent
Repeatability:	+/- Detection Limit or +/- 1% of Reading, whichever is greater
Linearity:	<1% FSR
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:	Optional10 or 10/100 Base T Ethernet and MODBUS (read only)
Optical fibre output:	ASCII format (optional)
Relay output:	High gas relay (normally closed contact), 1A at 30V DC/AC Warning relay (normally closed contact), 1A at 30V DC/AC Fault relay (normally closed contact), 1A at 30V DC/AC
Analogue input:	4-20mA process temperature and pressure sensors (optional)

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SPECIFICATIONS

POWER SUPPLY:	
Input:	
Mains:	100-240V AC, 50/60 Hz, 50VA
24V DC:	24V DC, 900mA - 1000mA
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:	10-50 l/min per flange (application dependent) 2-4 l/min per flange when set up with optional 0.39"(10mm) insertion tubes
OPERATING ENVIRONMENT:	
Operating & storage temperatures:	-4ºF to 131ºF (-20ºC to +55ºC) (Standard)
Protection classification:	IP66
HAZARDOUS AREA:	
Gases & Dusts:	ATEX Cat 3 (Gases) and Cat 2 (Dusts) Certificate Baseefa10ATEX0100X IECEx Zone 2 and Zone 21 Certificate IECEx BAS 10.0038X
Dimensions (HxWxD) & weights	Transmitter unit 11.18 x 10.35 x 7.80" (284 x 263 x 198mm) 26.5lb (12kg) Receiver unit 10.04 x 5.00 x 3.54" (255 x 127 x 90mm) 9.7 lbs (4.4kg)

* For operation at ambient temperatures between 131°F - 149°F (55°C and 65°C) please consult Servomex.

BUSINESS CENTERS

EUROPE (Europe and Africa)
Tel: +31 (0)79 330 1580
Fax: +31 (0)79 342 0819
Toll Free : 00800 7378 6639

USA & CANADA
Tel: +1 281 295 5800
Fax: +1 281 295 5899
Toll Free: 1 800 862 0200

LATIN AMERICA/ MEXICO
Tel: +55 11 5188 8166
Fax: +55 11 5188 8169

ASIA PACIFIC
Tel: +86 (0)21 6489 7570
Fax: +86 (0)21 6442 6498

INDIA
Tel: +91 22 39342700
Fax: +91 22 39342701

MIDDLE EAST
Tel: +971 6 5570730
Fax: +971 6 5571242

TECHNICAL CENTERS

Servomex Group Limited
Crowborough
East Sussex, TN6 3FB
UK
Tel: +44 (0)1892 652181
Fax: +44 (0)1892 662253

Servomex Company Inc
4 Constitution Way
Woburn, MA 01801 1087
USA
Tel: +1 781 935 4600
Fax: +1 781 938 0531
Toll Free: 1 800 433 2552

SYSTEMS ENGINEERING CENTERS

Crowborough, UK	Tel: +44 (0)1892 652181
Houston, USA	Tel: +1 281 295 5800
Shanghai, China	Tel: +86 (0)21 6489 7570
Mumbai, India	Tel: +91 22 39342700

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