

ES EXPERT SOLUTIONS

INCORPORATING THE SERVOMEX
PRODUCT
GUIDE

PRODUCT FOCUS ISSUE
SEVENTEEN

OXYGEN ANALYSIS EDITION



TAKE CONTROL

Reliable combustion analysis for both oxygen and combustibles

ENSURING PURITY

Discover our industry-leading trace O_2 analyzers

FAST RESPONSE

Tunable Diode Laser sensing for process oxygen measurements

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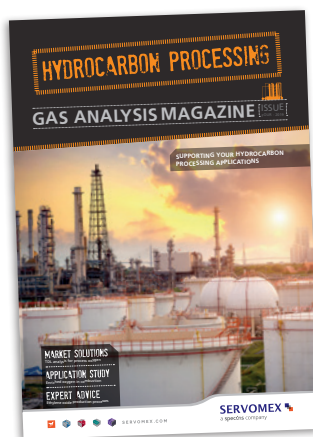
DISCOVER THE MAGAZINES FOCUSED ON YOUR MARKET



Our Power Generation magazines are available from our website, with news and features to support your combustion and emissions applications.

Topics in the latest issue include gas analysis in waste-to-energy power generation, SO₂ scrubbers for combustible sensors, and fuel conversion safety issues.

servomex.expert/powermagazine



Four magazines written for hydrocarbon processing (HP) customers are available to download now.

Featuring news, views, product and application studies that support HP processes, they're an indispensable insight into the application and benefits of expert gas analysis.

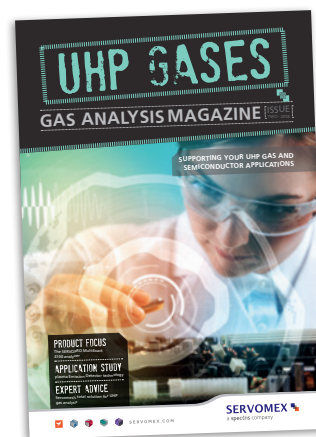
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The latest Servomex publication focusing on the industrial gases (IG) market sector is available to be downloaded by customers.

Containing news, features, expert advice and analysis, topics covered include medical gas production, a total analysis solution for ASUs, and dual oxygen/moisture measurements.

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WELCOME TO ISSUE 17 EXPERT SOLUTIONS

THE SERVOMEX PRODUCT MAGAZINE

YOUR GUIDE TO THE SERVOMEX
PRODUCTS AND SERVICES THAT SUPPORT
GLOBAL CUSTOMER PROCESSES

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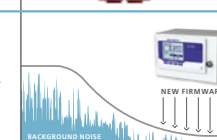
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PARAMAGNETIC SOLUTIONS

Three SERVOTOUGH products for non-depleting analysis in industrial processes



OUR FLEXIBLE SOLUTIONS FOR O₂ ANALYSIS

Welcome to the latest issue of Expert Solutions.

In this edition, we focus on the wide range of oxygen (O₂) analysis solutions offered by Servomex.

Our journey towards becoming the world leader in gas analysis began with the development of a revolutionary Paramagnetic O₂ measurement cell, which was incorporated into our first analyzer in 1961.

From that foundation, we have gone on to develop a wide range of O₂ analyzers for a variety of applications, using many different measurement technologies.

Paramagnetic sensors still form an important part of our product line-up, and the technology is integral to our SERVOTOUGH Oxy 1800, Oxy 1900 and OxyExact analyzers. It is also a key part of the innovative OxyDetect O₂ monitor, and the SERVOFLEX range of portable analyzers.

The SERVOPRO MonoExact DF310E can use Paramagnetic technology for percentage O₂ measurements, or a Coulometric sensor for parts-per-million (ppm) measurements. Coulometric technology is also critical to our DF-500 range of ultra-trace O₂ analyzers, along with the SERVOPRO MonoExact DF150E.

For a comprehensive O₂ solution, Servomex also offers Tunable Diode Laser (TDL) technology (the SERVOTOUGH Laser 3 Plus range) and Zirconia sensing (the SERVOTOUGH FluegasExact 2700). In addition, our multi-gas platforms such as the SERVOPRO MultiExact 4100 and SERVOPRO 4900 Multigas can be configured with a choice of digital sensing technologies, including those used for O₂.

In this issue, we provide an overview of these products and the applications they can be used for, highlighting the comprehensive range of O₂ measurement solutions delivered by Servomex's extensive sensing technology options.

These technologies are supported by our deep knowledge and experience in practical applications. For more information about the right solution for your specific process, get in touch with our team of experts at your nearest business center, or use the link below.

Contact our team today:
servomex.expert/contact-us

WANT TO VIEW OUR PRODUCTS ONLINE?

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WE CAN BUILD YOUR ANALYZER INTO A COMPLETE GAS ANALYSIS SYSTEM

Visit servomex.expert/systems or contact your local business center today

P03

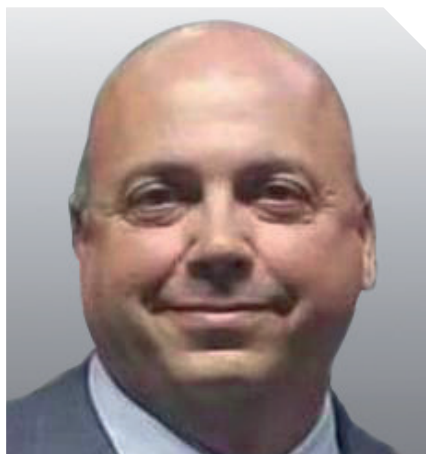
GLOBAL NEWS UPDATE

NEW RSMS FOR AMERICAS

Two new Regional Sales Managers (RSMs) have joined the sales team for Servomex in the Americas, reporting to VP Sales Americas Industrial Process and Emissions (IPE) Bob Heth.

Jesse Underwood is RSM for the Americas IPE Gulf 1 Texas region, responsible for managing and developing channel partnerships and direct sales in Texas. A former Business Development Manager at Emerson, he has a wealth of experience in the analytical industry as an RSM, product manager and product specialist, as well as in direct sales.

Rodney Clark is RSM for the Americas IPE Gulf 2 East region, managing channel partnerships and driving direct sales in that region, which includes Louisiana, Arkansas, Oklahoma and part of Texas. He is an experienced product sales specialist with an extensive history of working in the instrumentation and analytical manufacturing industry.



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Email: junderwood@servomex.com

Bob Heth said: *"I'm pleased to welcome Jesse and Rodney to the team and I'm certain their knowledge will be of great benefit to our customers. Both have a great understanding of the technical and application environments in which the IPE market segments operate, which will help our customers find the right solutions for their applications."*



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NEW APPOINTMENT FOR STRATEGIC ROLE

Servomex has appointed Joe Podolsky to the new role of Business Transformation and Planning Director, based in the UK Technical Centre in Crowborough.

Joe has extensive knowledge of strategic business development, including more than 25 years of experience with global industrial technology and service companies, among them Emerson Electric and Johnson Controls.

Prior to joining Servomex, Joe worked as director of a management consulting

firm, and before that, was VP of Sales and Marketing for Stork, which provided asset integrity solutions for the oil and gas industry.

Trevor Sands, Servomex President, said: *"This is an important strategic appointment for Servomex, and I'm delighted to welcome Joe to the team. His experience and skill set will be critical to building on our continued success and taking the business forward."*

STÉPHANE JOINS FRANCE TEAM

Based in France, Stéphane Barret is the latest RSM to join the EMEA sales region.

He joins Servomex from Endress & Hauser, where he was Account Manager for Development Gas Analysis for France and Algeria. He also provided some technical support for liquid gas analysis.

Stéphane will report to Jan Hordijk, Régional Sales Leader EMEA, who said:

"I'm very happy to welcome Stéphane to Servomex. His knowledge and ability will greatly benefit our customers in the region."

Email: sbarret@servomex.com



SERVOTOUGH

COMBUSTION CONTROL FROM A SINGLE ANALYZER



SERVOTOUGH FluegasExact 2700

The resilient SERVOTOUGH FluegasExact 2700 is an advanced flue gas analyzer delivering high-performance analysis of both O₂ and combustibles in combustion processes.

Easy to operate and maintain, it is designed for use in hazardous and challenging locations, with an integral self-contained sampling system for moisture-rich samples.

For O₂ analysis, it utilizes trusted, industry-proven Zirconia sensing technology. Initially developed for the automotive market, this is a very fast-response technology, able to take measurements very quickly, without any significant sample conditioning.

Unlike the comparatively disposable sensors used in the automotive industry, Servomex Zirconia O₂ sensors are specifically designed for process applications. This means they are able to work 24/7 in high temperatures, and still operate effectively for many years.

The typical lifespan of a Zirconia sensor in the FluegasExact 2700 is at least seven to eight years. This longevity is supported by the extractive measurement principle used within the analyzer.

In this arrangement, sensors are kept outside of the harsh process environment in a heated enclosure, which also ensures

low maintenance requirements. The sample is extracted and conditioned before it reaches the sample; this ensures there are no dew point issues, no moisture and no problems with acid gases, all of which helps to extend sensor life.

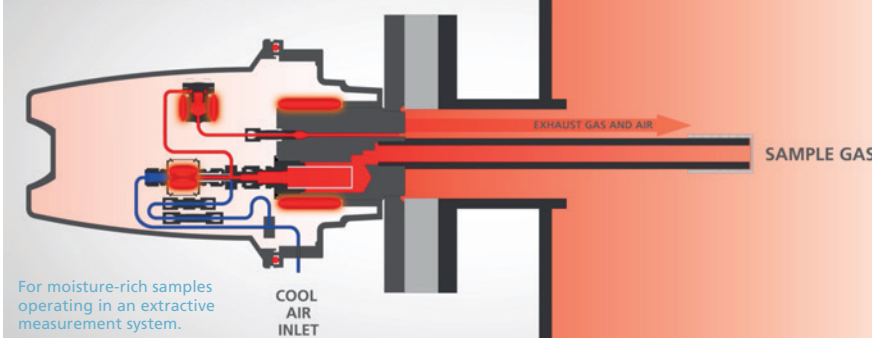
The sampling system includes safety interlocks to ensure sampling does not take place while the analyzer is heating, or not up to optimum temperature; the internal aspirator that drives the sample extraction will not switch on until the analyzer is up to temperature.

For effective combustion control, a thick film combustibles sensor is contained within the same housing, providing a significant cost advantage over single-sensor analyzer solutions. The FluegasExact 2700 uses auxiliary air to maintain the combustibles measurement even during oxygen-reducing conditions, and has a flow alarm to ensure continuous sample flow measurement.

The continuous flow monitoring system enables preventative maintenance.

For high-temperature applications, the FluegasExact 2700 can use thermal spacers to isolate the analyzer from the hot process wall. Remote extraction can be used to mount the analyzer on a panel a significant distance away from the process conditions. This often provides much safer access for maintenance.

SELF-CONTAINED SAMPLING SYSTEM



SERVOTOUGH FluegasExact 2700

KEY APPLICATIONS

- Process heaters
- Utility boilers
- Thermal crackers
- Crematoria
- Iron and steel
- Incinerators
- Biomass boilers

Watch the role of the SERVOTOUGH FluegasExact 2700 in the combustion process online now: servomex.expert/video-2700



LASER-BASED FAST-RESPONSE PROCESS O₂ MEASUREMENTS

The SERVOTOUGH Laser 3 Plus Process is a compact Tunable Diode Laser (TDL) analyzer specifically optimized for fast-response measurement of process oxygen (O₂).

TDL technology is a relatively new solution for O₂ analysis, providing the advantage that it can be used across a process with no need for a sample conditioning system. This results in lower maintenance requirements compared with traditional measurement technologies using sample conditioning.

The Laser 3 Plus Process is designed for in-situ, cross-stack measurements, using the latest Wavelength Modulated Spectroscopy measurement techniques and unique Servomex signal processing to monitor O₂ in multiple gas backgrounds.

It is easy to install, configure and calibrate by just one person using a mounting assembly for multi-directional adjustment. This ensures precision alignment and fast, accurate reinstallation after maintenance.



LINE LOCK CUVETTE TECHNOLOGY

The Laser 3 Plus uses line lock cuvette technology to ensure gas measurements that are reliable to SIL 2 levels, a clear advantage to safety systems.

Thanks to a cuvette filled with the target gas, the secondary detector always has a known target gas to sense. This enables

the main detector to remain "locked" in position, giving an accurate measurement of the gas, even if that measurement is zero.

The line lock system requires no maintenance and has built-in diagnostics that monitor the concentration within the cuvette.

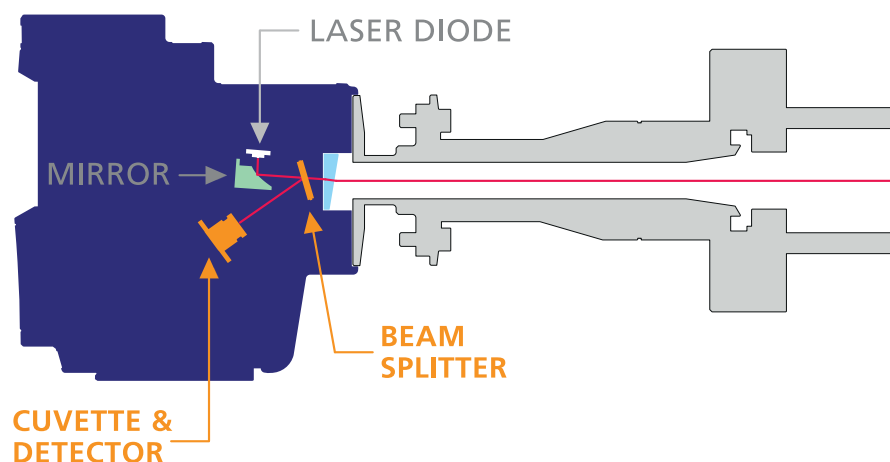
The stability and reliability of this system provides measurement confidence in applications where incorrect measurements may affect safety or lead to heavy fines for non-compliance.

Servomex has been offering TDL solutions for at least 15 years, so has significant experience and applications knowledge.

SERVOTOUGH Laser 3 Plus Process

KEY APPLICATIONS

- Oxidation control
- Inerting
- Safety monitoring
- Process control
- Flare gas monitoring
- Combustion control (<500°C)
- Coal to chemical



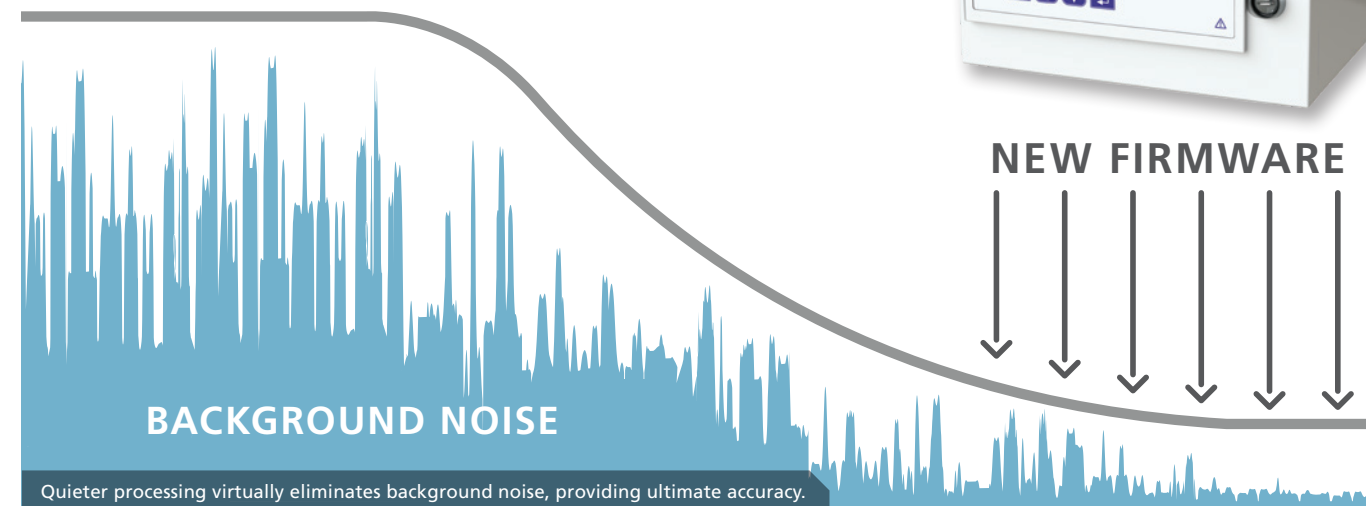
Watch the range of Laser 3 Plus videos:
servomex.expert/video-l3plus

QUIETER PROCESSING FOR ULTRA-HIGH-PURITY ANALYSIS

DF-550E NanoTrace



SIGNAL



NEW FIRMWARE

Most of Servomex's oxygen (O₂) sensors are highly effective at percentage O₂ measurements, but for trace and ultra-trace levels, an electrochemical solution is required.

Servomex's Coulometric cells are designed to work with O₂ at parts-per-million (ppm) levels and below, handling flammable and non-flammable samples. This is an advantage over Zirconia technology, which can provide ppm measurements but requires a non-flammable sample.

In traditional electrochemical sensor technologies, when the cell fails it has to be thrown away and replaced. The advantage of Servomex's Coulometric cell is that the electrolyte can be topped up for continued use. This extends the sensor lifetime to 5-10 years, much longer than the typical 12 months for a regular electrochemical sensor.

The DF-500 range is an ultra-trace analyzer series designed to measure O₂

down to parts-per-trillion (ppt) levels using Coulometric sensing technology.

An improved chassis and advanced software ensures quieter processing, which virtually eliminates background noise, providing ultimate accuracy.

The DF-550E analyzer is designed for ultra-trace O₂ detection down to 100ppt, while the DF-560E provides detection down to an industry-leading 45ppt, making it ideal for semiconductor fabs and analytical carts.

Both versions offer a fast speed of response and portability options for flexible use. The high-stability Coulometric technology negates the effects of upset-prone applications, while delivering a fast response in the presence of sample and rate flow changes.

Operational costs are low, with the sole ongoing maintenance requirement being an annual span calibration and no need for a programmable cell replacement.

DF-760E NanoTrace

Servomex's Coulometric sensor is also key to the DF-760E NanoTrace, which provides a simultaneous, dual measurement for trace moisture (using Tunable Diode Laser technology) and trace O₂ in a single compact analyzer.



DF-550E AND DF-560E

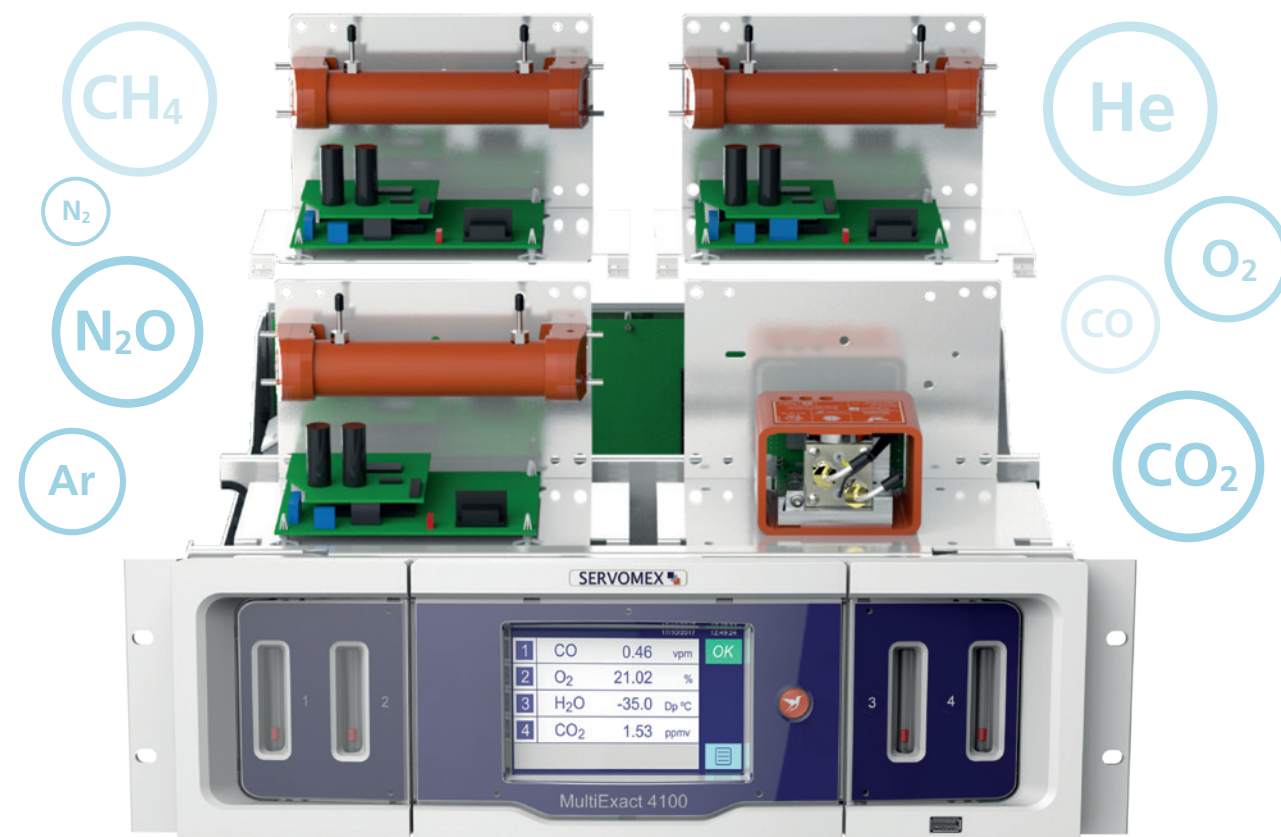
KEY APPLICATIONS

- Quality control checks for electronics grade gases
- Leak detection for electronics grade gases



Watch the DF-500 range in action:
servomex.expert/video-df500

WORLD-LEADING ANALYSIS FOR MEDICAL AND INDUSTRIAL O₂



A digital multi-gas analyzer, the SERVOPRO MultiExact 4100 is configurable with up to four of Servomex's world-leading range of gas analysis sensors, allowing accurate measurements of simultaneous gas streams.

This means it is flexible enough to use a range of ultra-stable, non-depleting sensing technologies for oxygen (O₂) measurements, including Paramagnetic for percentage readings in purity and control applications, and Zirconia for parts-per-million trace results.

Its outstanding measurement performance optimizes processes, improves yields and ensures high quality. It also complies with US and European Pharmacopeia methods for assay of medical O₂ and air.

The MultiExact 4100 is fully backward-compatible with Servomex's

previous multi-gas analyzers. This means it is easy to upgrade, and complies with existing standards and agreements while offering advanced communications for remote access.

Other improved features include intelligent functionality for independent auto calibration, 32 alarms and 32 relays, and the latest digital communication protocols, including Ethernet TCP/IP, PROFIBUS, and Modbus RTU, via RS232 or RS485.

Interaction with the analyzer is made simple by the intuitive, icon-driven color touchscreen. The USB serial port allows data logging and software upgrades, and makes it easy to duplicate analyzer configurations using a thumb drive.

The MultiExact 4100 also remotely interfaces, quickly and easily, with Servomex's AquaXact 1688 moisture sensor, for simultaneous monitoring of moisture with any three other measurements.

SERVOPRO MultiExact 4100

KEY APPLICATIONS

- Product purity on air separation plant
- Process control on air separation plant
- Bottling/filling plant applications
- Monitor trace carbon dioxide on scrubbed air inlet to air separation process
- Validation of medical O₂, nitrogen, air and helium



Watch our MultiExact 4100 product video:
servomex.expert/video-me4100

GAS ANALYSIS THAT'S EASY TO HANDLE

With the SERVOFLEX analyzer range, Servomex provides precision sensing technology in a truly portable battery-powered system.

Delivering high-performance analysis in a compact, reliable platform, the range is comprised of four different analyzers designed to meet specific needs.

For O₂ measurements, the SERVOFLEX range relies on Servomex's patented non-depleting Paramagnetic technology, delivering reliability and accuracy with a vibration-resistant sensor construction.

They utilize Infrared sensor technology for percentage measurements of carbon dioxide and, for some models, carbon monoxide.

Each analyzer is ergonomically designed for easy handling and powered by resilient lithium-ion batteries.



MiniFoodPack 5200

Benchtop analysis of oxygen (O₂) and carbon dioxide (CO₂) for checks and quality control in modified atmosphere packaging.



KEY APPLICATIONS

- Modified Atmosphere Packaging (MAP) quality testing for food and beverage products
- MAP for packaged pharmaceuticals
- Equilibrium Modified Atmosphere Packaging (EMAP) fresh consumable produce testing
- Laboratory and research

Micro i.s. 5100

Intrinsically safe analyzer measures O₂, carbon monoxide (CO) or CO₂, designed for use in all hazardous areas.



KEY APPLICATIONS

- Hazardous area combustion optimization
- Natural gas processing
- Refineries – catalytic cracker regeneration
- HyCO applications
- Cracker decoke cycle on petrochemical plant
- Process monitoring
- Inerting applications

MiniMP 5200

Benchtop analyzer offering single or dual measurements of O₂ and CO₂ in safe areas, including transfill applications.



KEY APPLICATIONS

- Laboratories and research
- Air separation and gas bottling plants
- Medical gas storage facilities
- Physiology and respiration studies
- Diving centers
- Transfilling
- Fermentation
- Combustion analysis

MiniHD 5200

An ultra-sensitive portable analyzer with a rugged, durable design, for IP65 analysis of O₂, CO or CO₂ in light industrial applications.



KEY APPLICATIONS

- Physiology studies
- Universities
- Combustion optimization
- Fermentation
- Medical gas verification
- Transformer entry

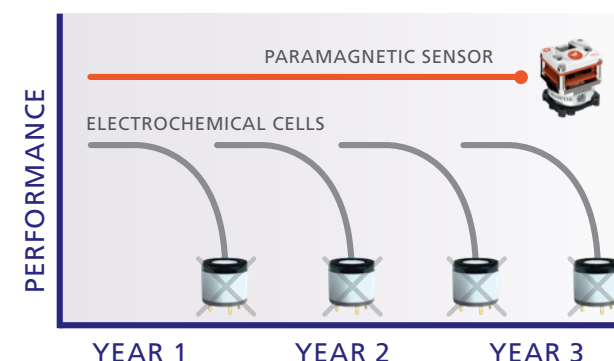
Watch our video introducing the SERVOFLEX Portables range online now:
servomex.expert/video-portables



RELIABLE AND NON-DEPLETING LIFE SAFETY O₂ MONITORING



SERVOMEX'S LONG-LIFE PARAMAGNETIC SENSOR OUTLASTS SEVERAL ELECTROCHEMICAL CELLS.



A breakthrough in life safety oxygen (O₂) monitoring, the Servomex OxyDetect is our first gas detector (as opposed to continuous gas analyzers) and the first on the market to include a Paramagnetic sensor.

It uses the Paracube Modus Paramagnetic sensor, which won the Queen's Award for Innovation, and was designed specifically for the medical market. This is a compact sensor with impressive resistance to vibration, making it highly effective for gas detection.

The Modus also has built-in compensation for temperature and pressure, which are the two factors that influence Paramagnetic O₂ measurements.

Paramagnetic technology is non-depleting, so the OxyDetect accurately monitors O₂ levels without the sensor deterioration that affects traditional electrochemical cells.

While the Paramagnetic sensor will operate indefinitely, electrochemical cells need to be replaced, typically every six to 12 months.

They also fail in an unsafe way, typically reporting a positive or good O₂ reading when they fail.

The traditional business model for a gas detection system is to provide coverage through a continuous maintenance contract. This typically means an engineer attending the site every six to 12 months or so to check the detectors and replace the electrochemical cell.

With a Paramagnetic sensor, this is no longer a requirement. Once the operator has paid upfront for the product, it just keeps working, with no ongoing maintenance needed.

Paramagnetic also has no drift effect, and requires infrequent calibration, typically once or twice a year.

With a light, wall-mountable design for easy installation, every OxyDetect has SIL 2 hardware compliance as standard. It is available in safe area and hazardous area versions. Servomex also offers a five-year warranty on the product, which includes the sensor.

SERVOMEX OxyDetect

KEY APPLICATIONS

- Instrumentation shelters
- Semiconductor facilities
- Industrial gas plants
- Bottling plants and storage
- Enclosed areas (refineries, HP, chemicals)
- Laboratories and universities
- Welding facilities and workshops



Watch our video demonstrating the benefits of OxyDetect gas detection online now:
servomex.expert/video-oxydetect

GET CUTTING-EDGE DIGITAL OXYGEN MEASUREMENTS



Designed for the accurate, stable and reliable measurement of trace O₂, the SERVOPRO MonoExact DF150E and SERVOPRO MonoExact DF310E analyzers combine Servomex's trace-level Coulometric sensing into an advanced industrial analysis platform.

Built around the latest innovations in sensor and analyzer design, they both offer sophisticated yet simple operation, controlled through a graphical user interface and high-brightness color touchscreen.

Ideal for a range of industrial applications, the MonoExact DF150E delivers a digital

measurement using tried and tested Coulometric technology.

It is fully backward-compatible with its forerunner, the DF-150E, ensuring total compliance with existing standards and customer agreements, while providing a more user-friendly platform designed for simple, low-cost maintenance.

These next-generation platform improvements are also provided by the MonoExact DF310E, which is optimized to measure trace O₂ in various industrial gas applications. It is also completely backwards-compatible with its DF-310E

predecessor, while delivering cost-saving and operational advantages.

Both MonoExact analyzers use dependable Coulometric sensing to supply highly stable, accurate O₂ measurement in ranges from low parts per billion to 10,000 parts per million.

The MonoExact DF310E can also be fitted with Servomex's patented non-depleting Paramagnetic sensing technology for percentage O₂ readings in the 0-25% range. In addition, it seamlessly integrates with Servomex's AquaXact 1688 moisture sensor for a dual measurement solution.

SERVOPRO MonoExact DF150E

KEY APPLICATIONS

- Glove boxes
- Heat treating
- Solder reflow ovens
- Laboratory
- Industrial gas production

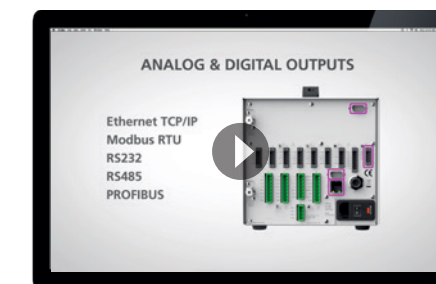


Watch our product video online:
servomex.expert/video-medf150e

SERVOPRO MonoExact DF310E

KEY APPLICATIONS

- Nitrogen, argon and hydrogen production
- Tanker transfill applications
- Specialty gas blending
- Electronic gas verification



Watch our product video online:
servomex.expert/video-medf310e

RUGGED SOLUTIONS FOR INDUSTRIAL ANALYSIS



WINNERS OF
THE QUEEN'S
AWARD FOR
ENTERPRISE



Paramagnetic cell developed by Hummingbird Sensing Technology

Servomex provides a range of highly accurate solutions for oxygen (O₂) analysis in a variety of industrial applications, using Paramagnetic sensing technology.

Paramagnetic technology is used to measure percentage ranges of O₂, usually in a dry sample. It is highly accurate, with little cross-interference.

Typically, a sample conditioning system is required to look after the condition of the sample before it enters the analyzer.

Three SERVOTOUGH analyzers, the Oxy 1800, Oxy 1900 and OxyExact 2200

deliver robust and reliable measurements through Servomex's groundbreaking, patented magneto-dynamic Paramagnetic technology.

This technique uses a very strong magnetic field to hold a moving dumbbell in position. The presence of O₂ forces the movement of the dumbbell, with the change in position monitored by an LED and platinum mirror.

The strong magnetic field holds everything in position, so the effects of vibration are negligible.

Significant testing has shown that these devices will withstand quite strong vibrations without any significant effect.

In addition, Paramagnetic technology is non-depleting, so the performance never deteriorates, providing a long operational life and reduced ongoing maintenance costs.

The rugged Oxy 1800 uses these benefits to provide accurate, highly specific O₂ measurements in safe area locations, while the explosion-proof Oxy 1900 and OxyExact 2200 are rated for hazardous area locations.

SERVOTOUGH Oxy 1800



KEY APPLICATIONS

- Ambient air monitoring
- Waste water treatment
- Food storage
- Marine inerting applications
- Clean room/glove boxes
- Inert blanketing
- Gas cylinder storage

SERVOTOUGH Oxy 1900



KEY APPLICATIONS

- Process control
- Safety critical oxidation such as ethylene oxide and propylene oxide purity
- Feedstock clean up
- Inerting/blanketing
- Flare stack analysis
- Vapor recovery

SERVOTOUGH OxyExact 2200



KEY APPLICATIONS

- Oxidation control reactions
- EO, PTA and EDC manufacturing
- Catalyst regeneration
- Hydrogen and chlorine production
- Solvent recovery
- Sewage and sludge driers

Find out more about Servomex's range of oxygen measurement technologies:
servomex.expert/video-oxygen

FIND YOUR INDUSTRY-LEADING GAS ANALYZER NOW WITH THE SERVOMEX PRODUCT GUIDE

SERVOTOUGH Oxy 1800

SAFE AREA

ACCURATE AND STABLE SAFE AREA O₂ ANALYZER

Designed to reliably measure up to 100% O₂ in many industrial applications, the Oxy 1800 is a stable, accurate and highly specific O₂ analyzer for safe area use.

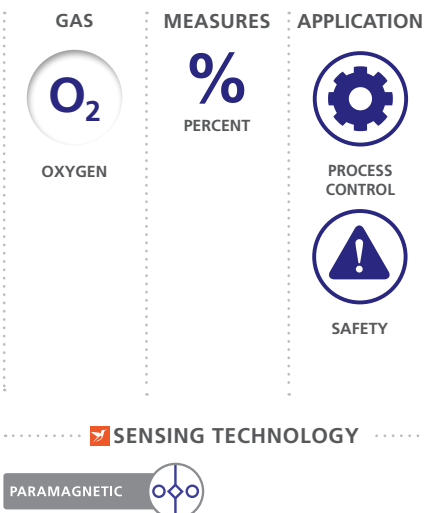


FEATURES AND BENEFITS

- Internal/external use (IP66/NEMA 4X rated)
- Special version for solvent-bearing samples
- Range of alarm outputs aids integration with other systems

APPLICATIONS

- Waste water treatment
- Food storage
- Marine inerting applications
- Inert blanketing



SERVOTOUGH Oxy 1900

HAZARDOUS AREA

AWARD-WINNING PARAMAGNETIC DIGITAL O₂ ANALYZER DESIGNED FOR HAZARDOUS AREA USE

Offering industry-standard features alongside revolutionary, value-added options, the Oxy 1900 O₂ gas analyzer sets new standards of flexibility, stability and reliability from a single, cost-effective unit.

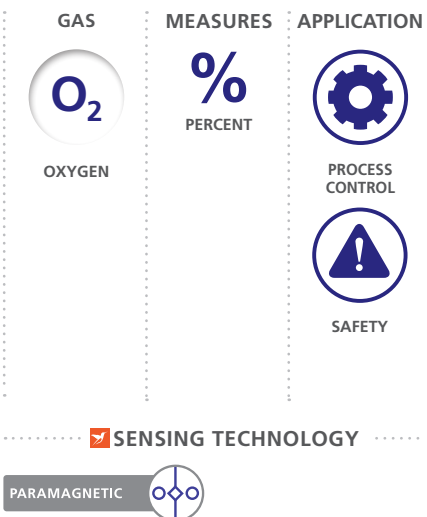


FEATURES AND BENEFITS

- Can be used in Safe Area to Zone 1/Div 1 hazard-rated locations
- Heated sample cell allowing simplified sample system requirements
- Unique Servomex Flowcube flow sensor technology for improved safety
- SIL 2 compliant

APPLICATIONS

- Process control
- Safety-critical oxidation, such as ethylene oxide and propylene oxide purity
- Flare stack analysis
- Vapor recovery



SERVOTOUGH OxyExact 2200

HAZARDOUS AREA

HIGH-SPEC PROCESS O₂ ANALYZER OFFERS SAFE OR HAZARDOUS AREA CONTROL WITH UP TO SIX TRANSMITTERS

The OxyExact 2200 high-specification O₂ analyzer offers an unrivaled combination of precision, flexibility and performance for optimum process and safety control. The OxyExact can be configured with a safe or hazardous area control unit with up to six transmitters.

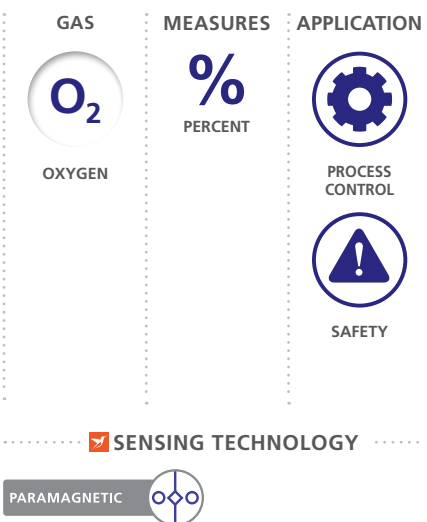


FEATURES AND BENEFITS

- Zone 1 certified to ATEX Cat 2, IECEx and FM/CSA Class 1 Div 1
- Three enclosure systems allow sampling of any flammable gas up to 100% O₂ and pressures of up to 40psi
- High-temperature version eliminates the need to condense hot sample prior to analysis
- SIL 2 compliant

APPLICATIONS

- Oxidation control reactions
- EO, PTA and EDC manufacturing
- Catalyst regeneration
- Solvent recovery



SERVOTOUGH SpectraScan 2400

HAZARDOUS AREA

REVOLUTIONARY INLINE
REAL-TIME ANALYSIS OF
HYDROCARBON
COMPONENTS C1-C6

A real-time optical analyzer utilizing the Precise field-proven optical bench, the SpectraScan 2400 delivers a breakthrough capability in the continuous analysis of light hydrocarbons C1-C6.

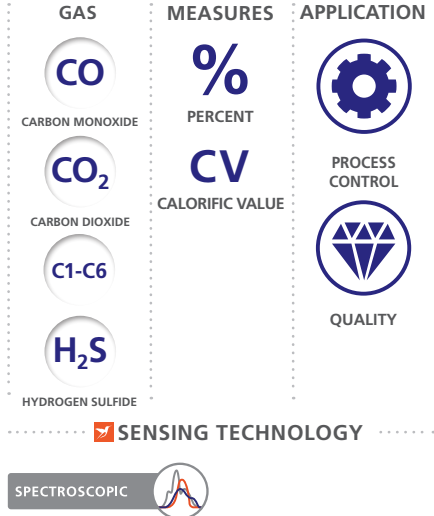


FEATURES AND BENEFITS

- North American Cat 1, Div 2 ATEX Cat 3 IECEx Zone 2
- Tunable band-pass filter enables simultaneous scanning of selected wavelength bands for gases including methane, ethane, propane and iso-butane
- Unique tunable filter process with Infrared photometer technology delivers industry-leading interference compensation

APPLICATIONS

- BTU/Wobbe content measurement
- Gas turbine, engines, fuel cells
- Flare stack monitoring



SERVOTOUGH SpectraExact 2500

HAZARDOUS AREA

RUGGED PHOTOMETRIC GAS
ANALYZER FOR DEMANDING
PROCESS APPLICATIONS

Servomex's iconic industry-leading Photometric analyzer delivers flexible single and multi-component gas analysis capability for corrosive, toxic and flammable sample streams. The SpectraExact 2500's reliable, accurate and stable real-time online process analysis makes it ideal for a range of process, combustion and emissions gas analysis applications.

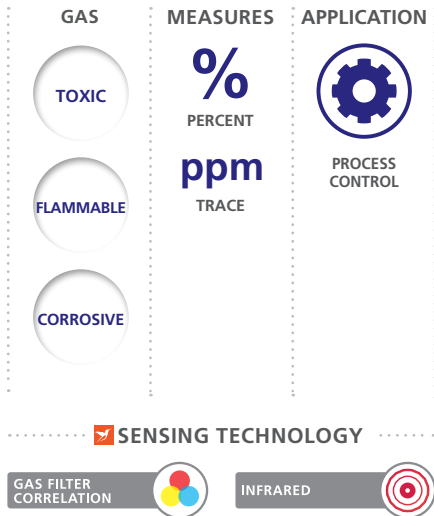


FEATURES AND BENEFITS

- IECEx and North American hazardous area approvals
- Easy integration with DCS – from 4-20mA to Modbus TCP
- Sample cell and electronics segregated – for easy maintenance and safe operation

APPLICATIONS

- Water in EDC/solvents
- Ethylene production
- TDI production
- Chlorine production



SERVOTOUGH FluegasExact 2700

HAZARDOUS AREA

ADVANCED FLUE GAS ANALYZER
FOR HIGH-TEMPERATURE
MEASUREMENT OF O₂
AND COMBUSTIBLES

Designed to measure O₂ and CO_e in flue gases for improved combustion efficiency and reduced emissions, the FluegasExact 2700 gas analyzer is designed to suit the most demanding needs of combustion efficiency applications in the power generation and process industries.

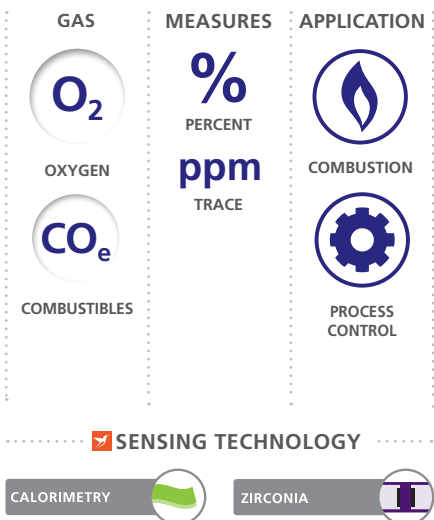


FEATURES AND BENEFITS

- ATEX Cat. 3, IECEx Zone 2 & North America Class I, Div 2
- Unique Flowcube flow sensor technology enables positive flow conditions to be validated
- Sulfur-resistant combustibles sensor enables sensor to operate at elevated sulfur levels
- Close-coupled extractive measurement principle

APPLICATIONS

- Process heaters
- Utility boilers
- Thermal crackers
- Crematoria and incinerators



SERVOTOUGH Laser 3 Plus Ammonia

HAZARDOUS AREA

WORLD-LEADING NH₃
MEASUREMENT, OPTIMIZED
FOR AMMONIA SLIP DeNOx
APPLICATIONS

This Tunable Diode Laser (TDL) analyzer specifically optimized for ammonia slip measurement provides all the benefits of Servomex's TDL technology in a compact, light unit, offering unparalleled installation flexibility plus cost and performance benefits.

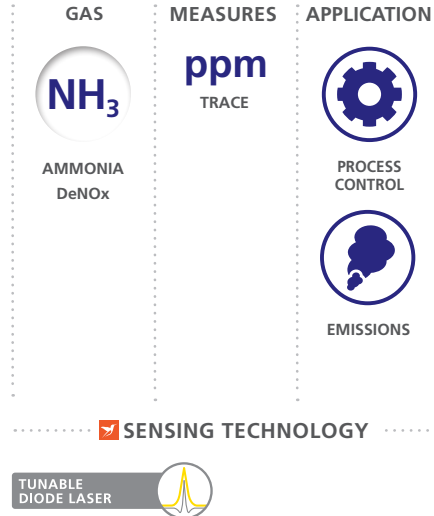


FEATURES AND BENEFITS

- High measurement reliability utilizing Servomex's own line lock cuvette technology
- ATEX, IECEx and North American hazardous area approvals
- A compact analyzer specifically optimized for the fast, accurate and responsive measurement of NH₃
- Ideal for slip ammonia application on power plants and fired heaters

APPLICATIONS

- Process heaters
- Incinerators
- Power stations
- Furnaces



SERVOTOUGH Laser 3 Plus Combustion

HAZARDOUS AREA

THE REVOLUTIONARY COMPACT
COMBUSTION ANALYZER
OPTIMIZED FOR CO, O₂, OR
CO + CH₄ MEASUREMENTS

Containing all the benefits of Servomex's TDL technology in a light, compact unit, with unmatched installation flexibility plus cost and performance benefits, this analyzer is optimized for fast, accurate and responsive measurements in combustion and process control, making it a must for safety applications.

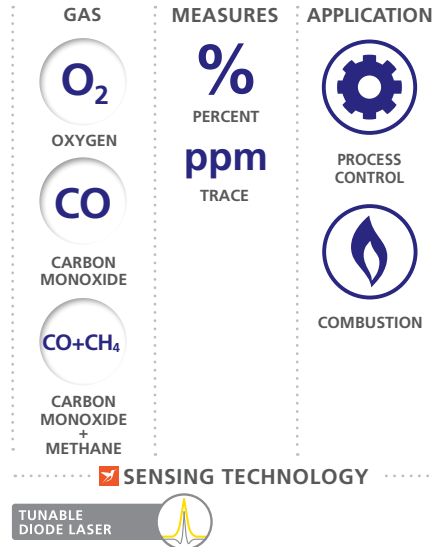


FEATURES AND BENEFITS

- High safety integrity utilizing Servomex's own line lock cuvette technology
- Compact size means quick and easy installation by one person with on-board display negating the need for laptop configuration
- ATEX, IECEx and North American hazardous area approvals. Approved for process Zone 2. SIL 2 assessed and CE marked
- Optimized for combustion processes

APPLICATIONS

- Process heaters
- Incinerators
- Power stations
- Furnaces



SERVOTOUGH Laser 3 Plus Process

HAZARDOUS AREA

THE WORLD'S SMALLEST TDL
GAS ANALYZER, OPTIMIZED FOR
PROCESS O₂ MEASUREMENTS

All the benefits of Servomex's TDL technology in a small, light unit offering unparalleled installation flexibility plus cost and performance benefits. Optimized for the fast, accurate and responsive measurement of process oxygen in hot or hazardous conditions.

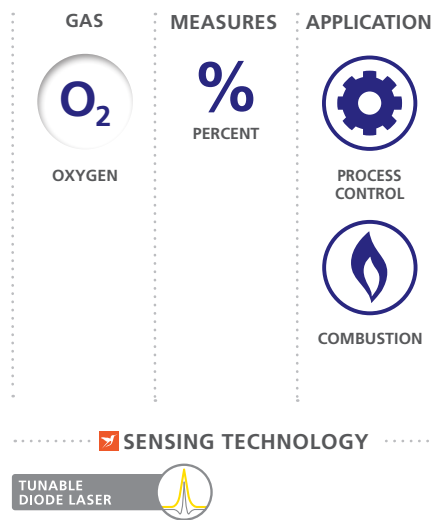


FEATURES AND BENEFITS

- High safety integrity utilizing Servomex's own line lock cuvette technology
- ATEX, IECEx and North American hazardous area approvals. Approved for process Zone 2. SIL 2 assessed and CE marked
- Quick and easy installation by one person with on-board display negating the need for laptop configuration
- Suitable for a range of combustion and process control applications

APPLICATIONS

- Oxidation control
- Inerting
- Safety monitoring
- Flare gas monitoring
- Combustion control (<500°C)
- Coal to chemical



SERVOTOUGH LaserSP 2930

HAZARDOUS AREA

HIGH-SENSITIVITY CROSS-STACK TDL ANALYZER

A high-performance gas analyzer designed for continuous in-situ monitoring, the LaserSP 2930 delivers a fast response time and highly stable performance. Suitable for measuring a range of gases including HCl, HF, H₂O, H₂S, HCN, and other hydrocarbons, the LaserSP is ideal for a wide range of process, combustion control and emissions applications.

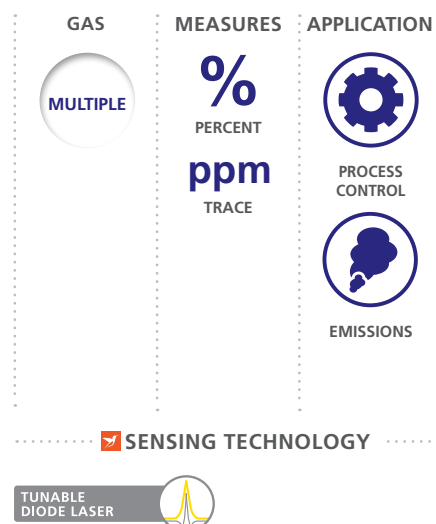


FEATURES AND BENEFITS

- Designed for Zone 1 and Zone 2 hazard rated (gas/dust) locations
- In-situ with no sample conditioning delivers reliable operation
- Wavelength Modulated Spectroscopy provides wide dynamic range and lowest cross-interference

APPLICATIONS

- Emission control systems for CEMS
- Combustion control systems for process heaters and crackers
- Ammonia slip control in DeNOx plants

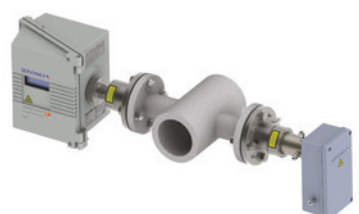


SERVOTOUGH LaserCompact 2940

HAZARDOUS AREA

SHORT PATH LENGTH TDL ANALYZER

Optimized for measurement across pipes and along short measurement cells and able to measure through very thin nozzles, reducing or even eliminating consumption of purge gas, the LaserCompact 2940 delivers the fast response time, highly stable performance and minimum sample conditioning advantages of TDL technology.

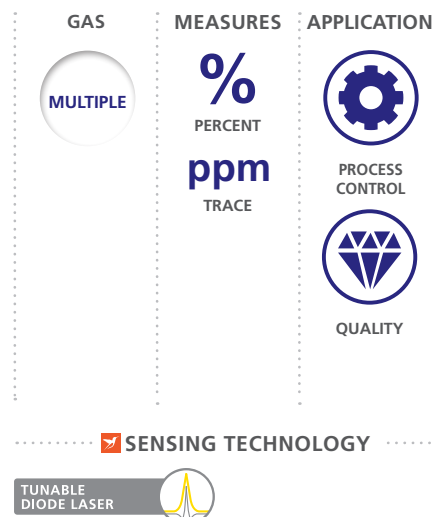


FEATURES AND BENEFITS

- ATEX, IECEx and North American hazardous area approvals. ATEX Cat 3 (Gases) and Cat 2 (Dusts) IECEx Zone 2 and Zone 21. CSA Divisions and Zones (gas and dust)
- Line width correction delivers accurate measurement with variations in matrix
- In-situ with low purge gas consumption

APPLICATIONS

- Chemical reactor – inert gas control
- Moisture in VCM
- Natural gas contaminants – H₂O, CO₂, H₂S



SERVOTOUGH LaserExact 2950

HAZARDOUS AREA

EXTRACTIVE TDL TRACE MULTI-GAS ANALYZER, DESIGNED FOR MEASURING TRACE GASES OFFLINE

Specifically designed for extractive trace analysis applications, the LaserExact 2950's TDL technology offers unsurpassed low ppb detection limits for most gases, making it ideal for the measurement of trace gases offline.

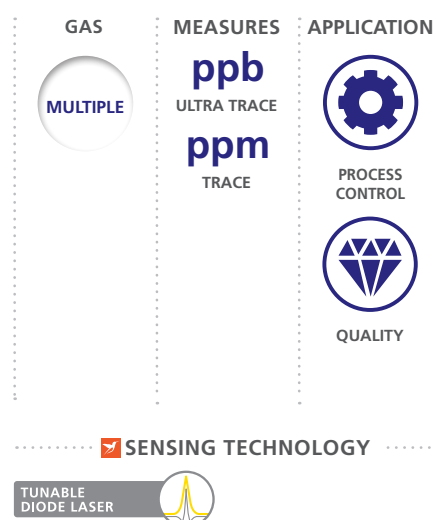


FEATURES AND BENEFITS

- Zone 2/Div 2 hazard-rated locations and use without purge
- Advanced multipass cell delivers ppb or low ppm detection limits
- Innovative PeakLock pattern recognition line tracking eliminates drift over extended operational periods

APPLICATIONS

- Refinery monitoring: H₂S and CO₂ (during natural gas refinement)
- HF and HCl impurity monitoring in process gas
- Monitoring H₂S during biogas production
- H₂O and H₂S in natural gas



SERVOTOUGH DF-140E

HAZARDOUS AREA

RELIABLE RESULTS IN A TESTING RANGE OF ENVIRONMENTS

The DF-140E allows for reliable oxygen measurement in a wide variety of environments, including outdoors and in explosive environments with a NEMA 7 remote sensor enclosure. Using the revolutionary non-depleting E-Sensor, the DF-140E delivers reliable readings without frequent recalibration and periodic sensor replacement.



FEATURES AND BENEFITS

- Long-term reliability and stability with minimal maintenance
- Durability – can be used in Class 1, Div 1 or 2 areas
- STAB-EL option allows for accurate measurement in the presence of acid gases

APPLICATIONS

- Reactor process control
- Pressure swing absorber nitrogen skids
- Blanketing and inerting



SERVOTOUGH DF-320E

HAZARDOUS AREA

HIGH-RELIABILITY TRACE AND PERCENT O₂ MEASUREMENTS IN HAZARDOUS AREA LOCATIONS

Designed for use in harsh and hazardous areas, the DF-320E uses Servomex's unique, non-depleting Coulometric sensor technology to give highly stable O₂ measurements, making it ideal for applications including hydrogen, propene and polyethylene production, oil refining and petrochemical process monitoring.

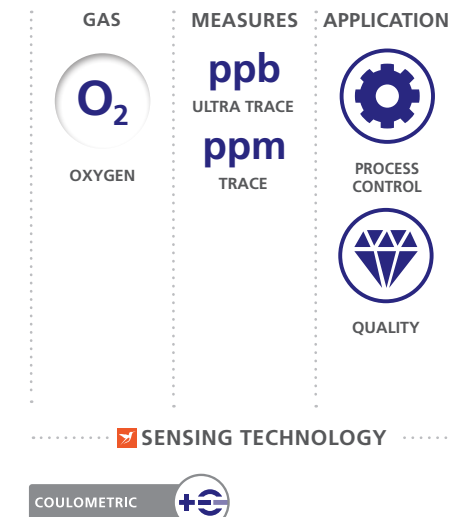


FEATURES AND BENEFITS

- For use in Class 1/Div 2
- Microprocessor-driven for easy configuration and maintenance
- Coulometric sensor delivers accurate results with no sensor drifting, false low readings, or frequent calibration requirements

APPLICATIONS

- Hydrogen production
- Polypropylene production
- Polyethylene production
- Oil refining
- Petrochemical applications



SERVOTOUGH DF-340E

HAZARDOUS AREA

HIGH-SENSITIVITY TRACE/PERCENT COULOMETRIC O₂ ANALYZER CERTIFIED FOR HAZARDOUS AREA USE

Designed for heated or external locations, the DF-340E remains stable in changing sample and flow rate conditions, and is designed to provide measurements of trace or percent level O₂ in pure gas streams and multi-gas backgrounds. It is ideal for upset-prone conditions.



FEATURES AND BENEFITS

- ATEX II and IECEx Certified
- Class 1/Div 2 Groups A,B,C and D certified
- Suitable for outdoor installation, with NEMA 4-rated sensor enclosure options
- Multiple background gas stream monitoring, with simplified ongoing maintenance requirements

APPLICATIONS

- Pressure swing absorber N₂ skids
- Reactor process control
- Blanketing and inerting
- Oil refinery monitoring
- Petrochemical process monitoring



H2scan

HAZARDOUS AREA

EXPLOSION-PROOF IN-LINE HYDROGEN PROCESS ANALYZER, USING A SOLID-STATE, NON-CONSUMABLE SENSOR CONFIGURED TO OPERATE IN PROCESS GAS STREAMS

The H2scan hydrogen process analyzer features thin film technology that provides a direct hydrogen measurement that is not cross-sensitive to other gases.

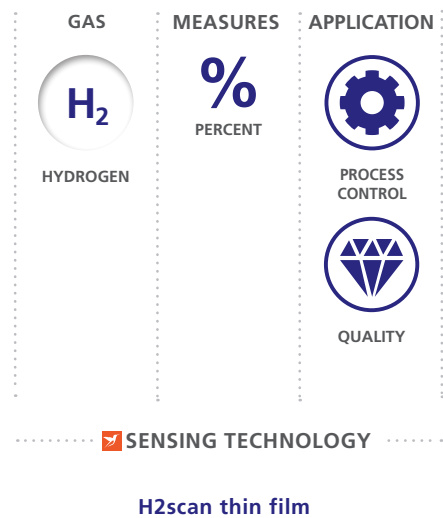


FEATURES AND BENEFITS

- UL Class 1, Div 1, Groups B, C, D, ATEX & CSA certifications
- Easily configurable alongside SERVOTOUGH SpectraScan 2400
- Simple system integration

APPLICATIONS

- Refinery
- Petrochemical
- Manufacturing
- Industrial gas supply



SERVOMEX AquaXact 1688

SAFE AREA

A FAST, ACCURATE AND RESILIENT MOISTURE MEASUREMENT SOLUTION

The AquaXact 1688 is a rugged ultra-thin film Aluminum Oxide moisture sensor that enables the measurement of moisture in a wide variety of gas phase process applications, such as glove boxes, air separation units, natural gas processing, transportation, and instrument air, with no calibration required after sensor replacement or dry-out.

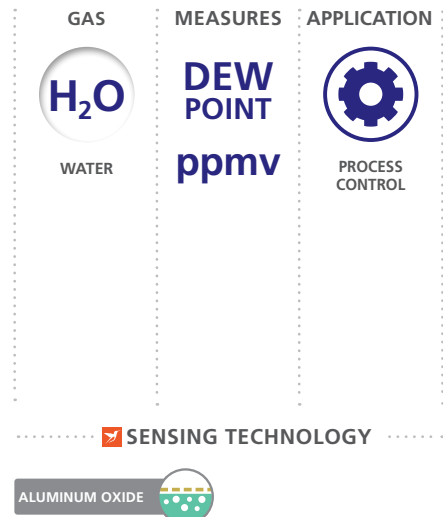


FEATURES AND BENEFITS

- Functions as a standalone 4-20 mA transmitter or remotely interfaces with our digital controller, MonoExact DF310E and MultiExact 4100
- NIST-traceable field-replaceable sensor element, for hassle-free recalibration
- Stainless steel, weatherproof casing (Class 1 Div 2 in 2019) enables operation in ambient temperatures ranging from -10°C to +70°C

APPLICATIONS

- Glove boxes
- Solder reflow ovens
- Compressed air generation
- Ethylene production



SERVOMEX AquaXact 1688 Controller

SAFE AREA

DIGITAL CONTROLLER PLATFORM FOR THE AQUAXACT 1688

Built specifically to work in harmony with the AquaXact 1688 ultra-thin film Aluminum Oxide moisture transmitter, this digital controller provides a high-clarity color touchscreen display, alarms, relays and advanced communication protocols, and allows easy sensor tip replacement in the field.

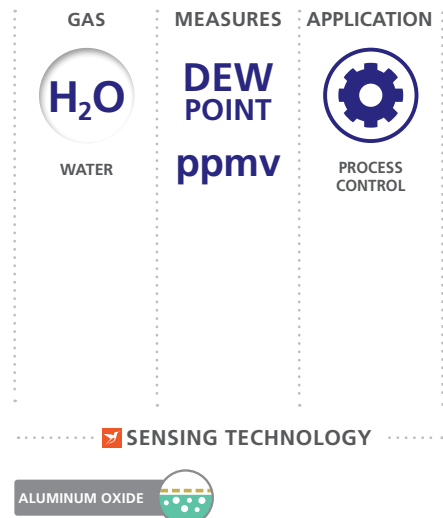


FEATURES AND BENEFITS

- Dew point and ppmv H₂O measurements
- Dense Al₂O₃ pore structure and geometry provides the AquaXact sensor with greater stability and reduced drift over 12 months
- Compact footprint for easy integration into your system
- Advanced digital communications including Modbus, Ethernet Modbus TCP/IP and PROFIBUS

APPLICATIONS

- Air separation units
- Glove boxes
- Instrument air units
- Refining gases



SERVOPRO MonoExact DF150E

SAFE AREA

TOUCHSCREEN PPM OXYGEN ANALYZER FOR GENERAL INDUSTRIAL APPLICATIONS

Using a new and improved digital touchscreen with icon-driven guided user interface (GUI) for easier operation, the MonoExact DF150E combines the reliability of Servomex's tried and tested Coulometric oxygen sensor with a user-friendly package.



FEATURES AND BENEFITS

- Updated digital sensor includes new operation and maintenance features that reduce cost of ownership
- Back-compatible with DF-150E platform, including hardware wiring inputs and gas inlets
- Servomex proprietary software makes reporting and parameter control simple

APPLICATIONS

- Glove boxes
- Heat treating
- Solder reflow ovens
- Industrial gas production



SERVOPRO MonoExact DF310E

SAFE AREA

NEXT-GENERATION DIGITAL OXYGEN ANALYZER DESIGNED FOR INDUSTRIAL GAS APPLICATIONS

Designed specifically for accurate measurements of oxygen in industrial gas applications, the MonoExact DF310E is a next-generation digital oxygen analyzer that combines precise, trace-level measurement with a new icon-driven guided user interface (GUI) and advanced digital communications.

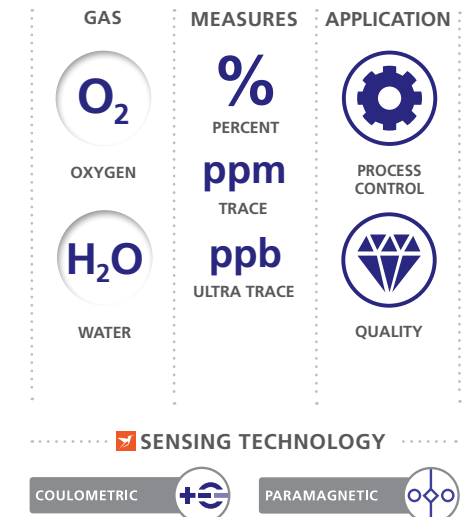


FEATURES AND BENEFITS

- Advanced touchscreen GUI for intuitive setup and operation
- Back-compatible with the DF-310E platform's wiring inputs and gas connections
- Paramagnetic sensor capable for % level O₂ measurements
- AquaXact Aluminum Oxide sensor is optional for simultaneous O₂ and H₂O monitoring
- RS232, RS485, Modbus, PROFIBUS, and Ethernet Modbus TCP/IP

APPLICATIONS

- Air separation units
- Medical/industrial gases
- Specialty gas blending



SERVOPRO 4200/4210

SAFE AREA

GAS ANALYZER SUITABLE FOR FLAMMABLE GAS MIXTURES

The 4200/4210 multi-gas analyzer is designed to monitor flammable gas samples including H₂/CO, 'HyCO' or 'Syngas' mixtures for trace level contaminants and percent level components. The 4200/4210 offers oxygen control using Servomex's unique Paramagnetic cell, trace level measurement of CO, CO₂, N₂O and CH₄ and percent levels of CO, CO₂, CH₄ using Photometric sensor technology.

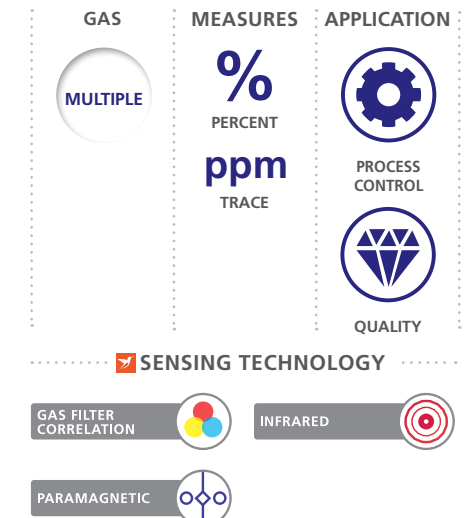


FEATURES AND BENEFITS

- Meets the requirements of EN 61010-1:2010 and EN 61326-1:2013
- Measures up to four gases simultaneously
- RS232/RS485 and Modbus communications

APPLICATIONS

- Product quality validation in hydrogen plants
- HyCO process control
- Bottling/filling plants producing flammable gas blends



SERVOPRO 4900 Multigas

SAFE AREA

AN ADVANCED DIGITAL MULTI-GAS CEMS ANALYZER

Specifically designed for Continuous Emissions Monitoring (CEMS) of flue gas, the SERVOPRO 4900 Multigas provides up to four simultaneous gas stream measurements. It combines Servomex's leading-edge sensing technologies with a modern digital platform for next-generation performance.

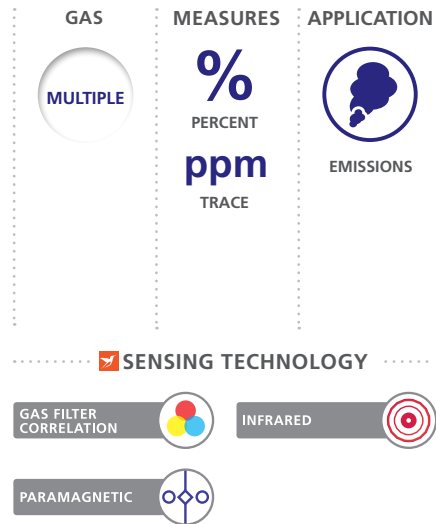


FEATURES AND BENEFITS

- A comprehensive solution for CEMS analysis of multiple flue gas components
- Low maintenance and cost of ownership
- Advanced digital communications including Ethernet, Modbus TCP/IP and PROFIBUS
- Automated calibration/validation routines triggered by internal timer or external triggers
- Completely updated icon-driven software interface for easy set-up and operation

APPLICATIONS

- Utility boilers
- Chemical incinerators
- Crematoria
- Mobile labs



SERVOPRO Plasma

SAFE AREA

RELIABLE MONITORING OF NITROGEN IN ARGON AND HELIUM, OPTIMIZED FOR AIR SEPARATION UNIT (ASU) PLANT OPERATIONS

Specifically designed for the continuous monitoring of N₂ in Ar or He or both, the Plasma's unique plasma emission detector provides an accurate, highly stable and reliable measurement ideal for the requirements of ASU plant operators.



FEATURES AND BENEFITS

- Electrical safety to IEC 61010-1: Ed 3. In compliance with Low Voltage, EMC and applicable Directives
- Wide measurement range – 0-1ppm, 0-10ppm, 0-100ppm (higher on request)
- Electronic flow control system for low flow consumption and reading stability

APPLICATIONS

- Argon production
- Track loading
- Pure gas bottling
- Specialty gas laboratories



SERVOPRO FID

SAFE AREA

TRACE HYDROCARBON ANALYZER IDEAL FOR AIR SEPARATION UNITS (ASU) SAFETY AND QUALITY CONTROL APPLICATIONS

A Flame Ionization Detector analyzer designed to assure safe operation for cryogenic ASU, the FID ensures the level of Total Hydrocarbons (THC) is maintained below flammable limits, as well as providing quality control in pure O₂, N₂, Ar, air, He and CO₂.



FEATURES AND BENEFITS

- Electrical safety to IEC 61010-1. In compliance with Low Voltage, EMC and applicable Directives
- Excellent output resolution over three operating ranges
- Electronic flow controllers for air, fuel and sample for no dependency to atmospheric pressure variations and inlet pressure variation

APPLICATIONS

- Cryogenic air separation
- Process control
- Food gas manufacture
- Product validation



SERVOPRO MultiExact 4100

SAFE AREA

A SOPHISTICATED, NEXT-GENERATION MULTI-GAS ANALYZER PROVIDING A HIGHLY ADAPTABLE ANALYSIS SOLUTION

The MultiExact 4100 is a high-performance multi-gas analyzer designed to provide up to four simultaneous gas stream measurements including: O₂ (trace, control, and purity), CO₂, CO, N₂O, CH₄ (trace), Ar in O₂, N₂ in Ar, O₂ or air, and He in Ar, O₂ or N₂.

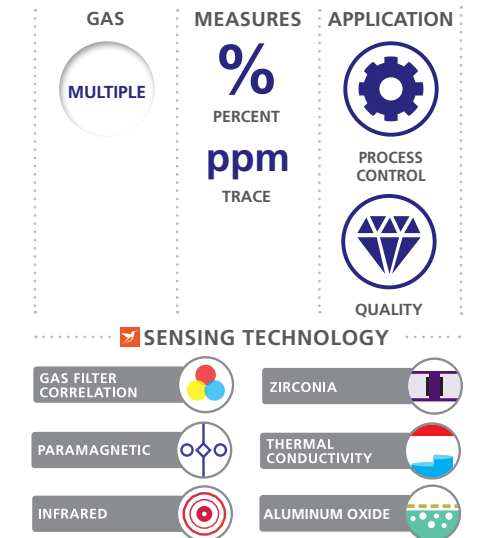


FEATURES AND BENEFITS

- Comprehensive solution for industrial and medical gas manufacture and for pharmacopeia applications
- Integrated support for the AquaXact 1688 Aluminum Oxide moisture transmitter
- Uses ultra-stable, non-depleting digital sensing technologies that help extend maintenance intervals

APPLICATIONS

- Product purity on air separation plant
- Process control on air separation plant
- Monitor trace CO₂ on scrubbed air inlet to air separation process
- Validation of medical O₂, N₂, air and He



SERVOPRO Chroma

SAFE AREA

HIGHLY VERSATILE TRACE GAS ANALYZER PLATFORM CONFIGURABLE TO A WIDE RANGE OF APPLICATIONS

Offering a unique, non-depleting plasma emission detector, the Chroma analyzer is one of the most versatile gas analyzers for trace gas measurement available. Most applications will be satisfied by a single 4U rack analyzer configuration, making the Chroma a compact, cost-effective solution for continuous process control or quality monitoring.

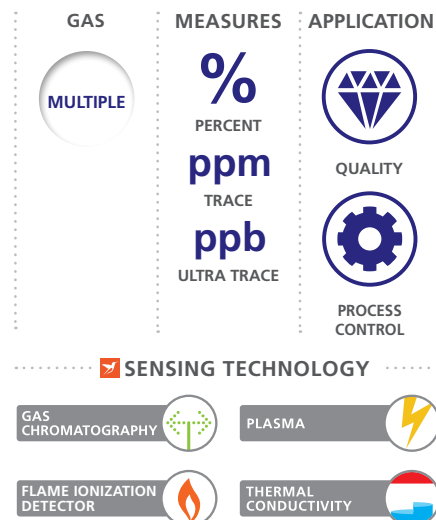


FEATURES AND BENEFITS

- Fully automated – tune to the application – system for unique simplicity of use
- Standalone systems requires no third-party software or computer to operate
- For THC measurements the PlasmaHC system requires no FID and therefore no H₂ fuel gas

APPLICATIONS

- Medical gas production
- Air separation plants
- Cryogenic truck loading station
- High purity gas production



SERVOPRO MultiExact 5400

SAFE AREA

DIGITAL MULTI-GAS ANALYZER, OPTIMIZED FOR WIDE RANGE OF AIR SEPARATION UNIT (ASU) MEASUREMENTS

Combining industry-leading performance and a range of new and enhanced functions as standard, the MultiExact 5400 offers air separation plants a multi-gas analyzer specifically optimized to industry requirements – with GFx, Zirconia and Paramagnetic measurements now augmented by Servomex's revolutionary TCD measurement sensing technology.

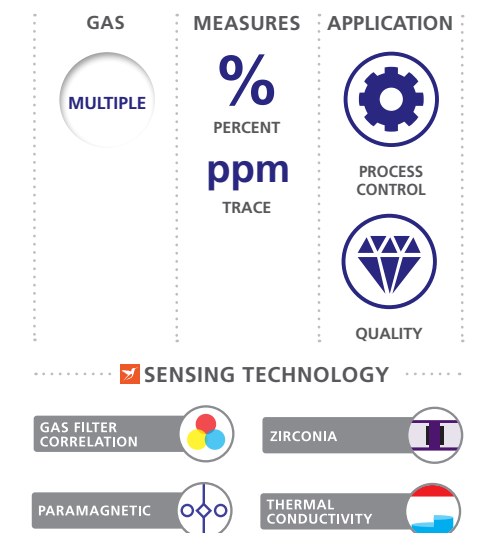


FEATURES AND BENEFITS

- IEC 61010-1. European Pharmacopeia compliant. US Pharmacopeia compliant (O₂). In compliance with Low Voltage, EMC and applicable Directives
- TruRef technology offers class leading measurements for Ar, He and N₂
- Options include digital communication options, an integrated valve block function and unique Servomex Flowcube flow sensor technology

APPLICATIONS

- Product purity on air separation plant
- Process control on air separation plant
- Monitor trace CO₂ on scrubbed air inlet to air separation process
- Validation of medical O₂, N₂, air and He

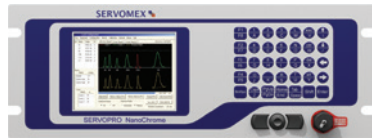


SERVOPRO NanoChrome

SAFE AREA

SUB-PPB TRACE MEASUREMENT OF H₂, CH₄, CO, CO₂, N₂, Ar AND NMHC FOR THE SEMICONDUCTOR INDUSTRY

Incorporating the latest advances in gas sensing technology and signal processing methodology, the NanoChrome revolutionizes ultra-trace purity measurements for the semiconductor industry.



FEATURES AND BENEFITS

- In compliance with Low Voltage, EMC and applicable Directives
- New PED Sensor technology enables sub-ppb measurements of H₂, CH₄, CO, CO₂, N₂, Ar and NMHC
- Enables unique total Servomex solution for UHP gas analysis

APPLICATIONS

- Semiconductor production – quality control measurements
- Semiconductor production – stationary analytical systems
- UHP gas production – quality control measurements



SERVOPRO MonoExact TCD

SAFE AREA

DIGITAL SINGLE-GAS ANALYZER WITH TCD MEASUREMENTS

The MonoExact gas analyzer brings Servomex's acclaimed TruRef Thermal Conductivity (TCD) technology to air separation unit (ASU) operators in a compact, single-component analyzer, offering class-leading measurements for Ar, He, N₂ and H₂.

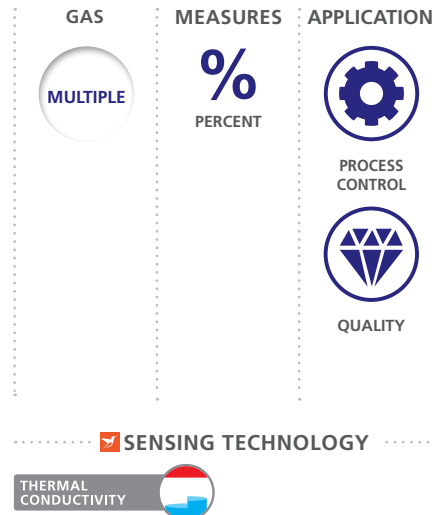


FEATURES AND BENEFITS

- In compliance with Low Voltage, EMC and applicable Directives
- TruRef offers ASU operators truly industry-leading measurements for drift accuracy, linearity and repeatability
- Cost of ownership optimized by longer calibration intervals and no reference gas requirements

APPLICATIONS

- Validation on industrial processes
- Hydrogen purity
- Process control on air separation plants
- Bottling/filling plant applications



SERVOPRO NO_x

SAFE AREA

CHEMILUMINESCENCE DETECTOR (CLD) ANALYZER FOR KEY EMISSIONS APPLICATIONS INVOLVING ULTRA-LOW NO, NO₂ AND NO_x

Utilizing Chemiluminescence detection technology to measure NO or NO/NO₂/NO_x concentrations in industrial gas and vehicle emission applications, the versatile SERVOPRO NO_x can be calibrated for four measurement ranges starting from ultra-low to high ppm and is easy to install and operate.

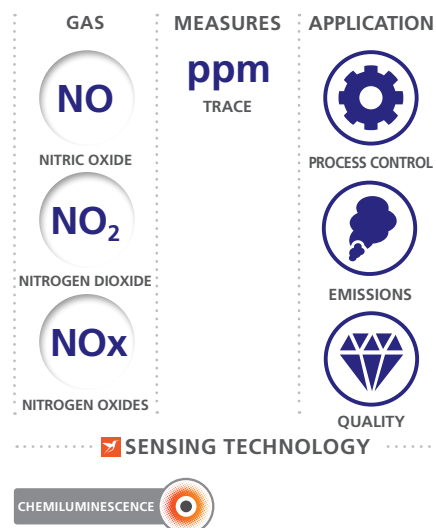


FEATURES AND BENEFITS

- High-dynamic-range NO_x emissions monitoring solution with a fast response
- Non-depleting light-based measurement and electronic flow control keeps costs low
- Heated version available for wet-to-dry conversion option
- Mobile Source emissions standard EPA 1065/1066 and LD Euro 6, HD Euro V1 compliant

APPLICATIONS

- Continuous emissions monitoring (CEMS)
- Scrubber efficiency
- Turbine/generator feedback control
- SCR/SNCR feedback control



SERVOPRO SO₂

SAFE AREA

USES PROVEN PULSED UV FLUORESCENCE TECHNOLOGY TO DELIVER A PRECISE AND RELIABLE MEASUREMENT OF ULTRA-LOW SULFUR DIOXIDE IN EMISSIONS AND AMBIENT AIR

For industrial applications that require ultra-low emissions monitoring of sulfur dioxide, this robust analyzer is designed to slot seamlessly into rack systems, making it easy to integrate with existing emissions monitoring systems to provide unrivaled performance.

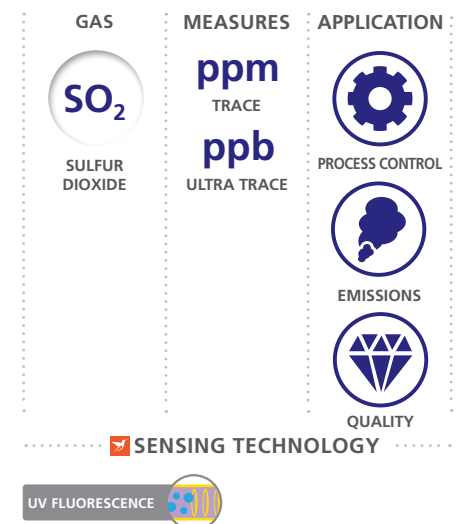


FEATURES AND BENEFITS

- Ultra-long-lasting UV light source
- Removable flash memory stores up to 10 years of data
- Operation over wide temperature range reduces cost of ownership
- User selectable dual ranges with auto-ranging
- Easy maintenance procedures

APPLICATIONS

- Continuous emissions monitoring (CEMS)
- Ambient air monitoring



SERVOPRO HFID

SAFE AREA

HIGH-PERFORMANCE FAST ANALYSIS USING HEATED FID

Using a highly sensitive heated Flame Ionization Detector (HFID) for measuring volatile hydrocarbon concentrations in industrial or vehicle emission applications, the HFID utilizes an internally heated oven set to 190°C to maintain the sample gas above the dew point of most hydrocarbons expected to be present, for optimum performance in total hydrocarbon (THC) analysis. Can be equipped with a non-methane cutter for additional methane (CH₄) and non-methane hydrocarbon (NMHC) reporting.

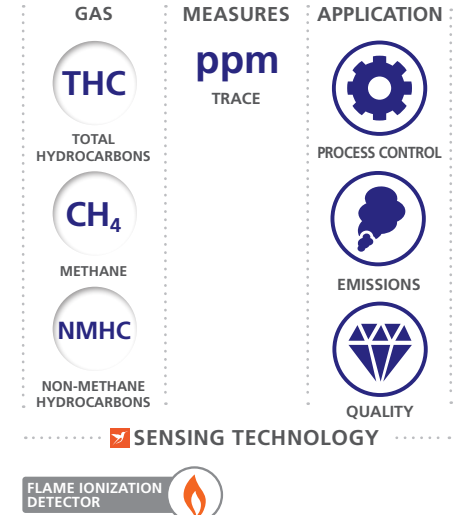


FEATURES AND BENEFITS

- Four user-definable measurement ranges, reconfigurable in the field
- High-accuracy, gas-selective FID technology for maximized uptime
- Heated oven for maximum stability and "hot/wet" sampling
- EPA Method 25A compliant
- EPA 1065/1066 and LD Euro 6, HD Euro V1 compliant
- Heated FID detector at 190°C for the most accurate THC determination

APPLICATIONS

- Continuous emissions monitoring (CEM)
- VOC abatement
- Scrubber efficiency
- Compliance monitoring and testing



GAS DETECTION OxyDetect

SERVOMEX

NON-DEPLETING PARAMAGNETIC O₂ MONITOR DESIGNED FOR LIFE SAFETY APPLICATIONS

Life safety monitor designed for safe area or hazardous area environments, utilizing superior performance of award-winning, non-depleting Hummingbird Paramagnetic O₂ sensing technology.

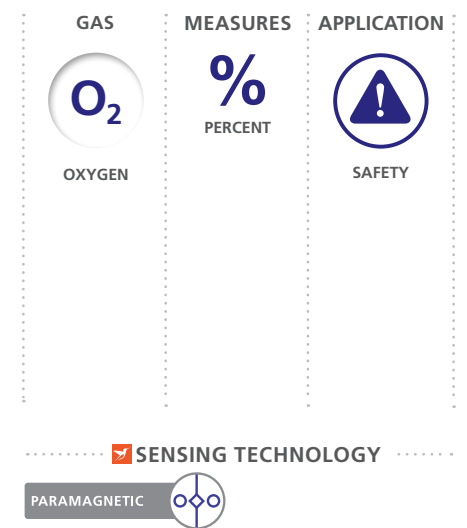


FEATURES AND BENEFITS

- IP66 (indoor use only)
- The most reliable O₂ detector on the market
- No more false readings or false alarms caused by depleting cell technologies
- SIL 2 compliant

APPLICATIONS

- Pharmaceutical plants
- Helium production and storage
- Semiconductor facilities
- Laboratories and universities



SERVOFLEX Micro i.s. 5100

PORTABLES

INTRINSICALLY SAFE ANALYZER MEASURES O₂, CO OR CO₂

Designed for the measurement of toxic and flammable gas samples, the intrinsically safe Micro i.s. 5100 is a unique analyzer certified to Zone 0 and Zone 1 and suitable for measuring percent levels of O₂, CO and CO₂.

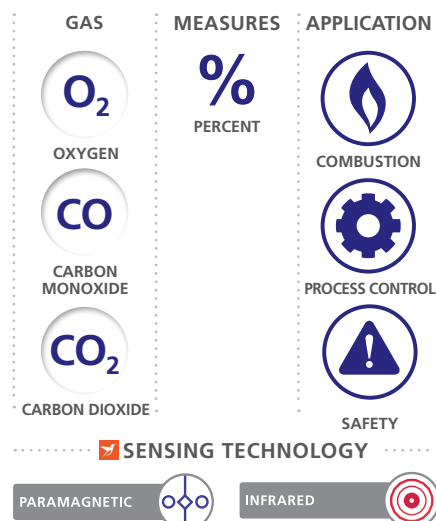


FEATURES AND BENEFITS

- Intrinsically safe design to ATEX and IEC standards ensures safety operation in hazardous environments
- Ergonomic design ensures easy operation on the move
- Available in non-pump or pump versions with optional sample conditioning kit

APPLICATIONS

- Hazardous area combustion optimization
- Refineries – catalytic cracker regeneration
- Process monitoring
- Inerting applications



SERVOFLEX MiniMP 5200

PORTABLES

BENCHTOP ANALYZER OFFERING SINGLE OR DUAL MEASUREMENTS OF O₂ AND CO₂

The only truly portable battery-powered gas analyzer with MCERTS certification, the MiniMP 5200 is designed to offer single or dual measurement of O₂ and CO₂ by utilizing Servomex's advanced Paramagnetic and Infrared sensing technologies.

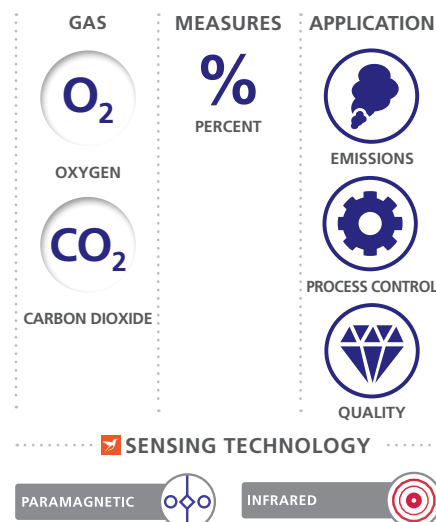


FEATURES AND BENEFITS

- EN15267-3 (MCERTS V3.3, Annex F) makes the MiniMP ideal for source testers that require reference O₂ analysis for CEMS verification
- Li-ion battery system offers unique true portability
- Non-depleting sensor design ensures long service with minimal calibration

APPLICATIONS

- Laboratories and research
- Air separation and gas bottling plants
- Transfilling
- Combustion analysis



SERVOFLEX MiniHD 5200

PORTABLES

PORTABLE GAS ANALYZER FOR MEASUREMENT OF COMMON GAS MIXTURES

Designed for use in field locations or light industrial applications, the MiniHD 5200 portable gas analyzer is a rugged, heavy duty analyzer designed to accurately measure the levels of O₂, CO and CO₂ within common gas mixtures. The MiniHD 5200 utilizes Servomex's non-depleting Paramagnetic and Infrared sensors to give dependable and accurate results.

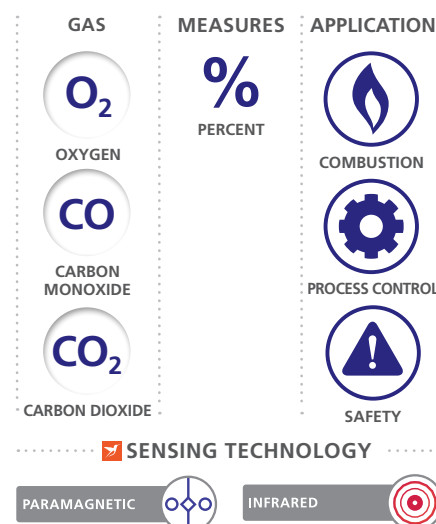


FEATURES AND BENEFITS

- Robust IP65 construction meets the demanding needs of field location analysis
- Long life Li-ion rechargeable batteries and range of sampling options ensure ease of use
- Accurate measurement of O₂, CO and CO₂ levels with no background interference

APPLICATIONS

- Physiology studies
- Universities
- Combustion optimization
- Medical gas verification



SERVOFLEX MiniFoodPack 5200

PORTABLES

BENCHTOP ANALYZER FOR QUALITY CONTROL/CHECKS IN MODIFIED ATMOSPHERE PACKAGING

A small sample volume portable benchtop analyzer designed specifically for the checking and quality control of gas mixtures in Modified Atmosphere Packaging (MAP) used in the food and pharmaceutical industries, the MiniFoodPack 5200 enables single or dual measurements for percent levels of O₂ and CO₂.

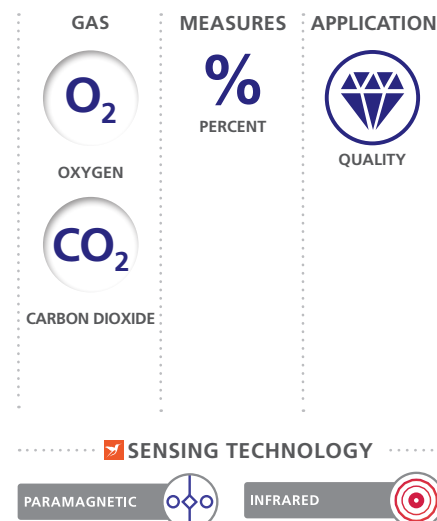


FEATURES AND BENEFITS

- CE marked and in compliance with EEC, EMC and WEEE Directives. UL approved and CE marked 100-240V/43-70Hz AC power supply
- Range of sampling accessories is available for taking measurement from rigid or flexible pack
- Rechargeable battery option enables complete portability for flexible operation

APPLICATIONS

- Modified Atmosphere Packaging (MAP) quality testing for food and beverage products
- Modified Atmosphere Packaging (MAP) for packaged pharmaceuticals
- Equilibrium Modified Atmosphere Packaging (EMAP) fresh consumable produce testing
- Laboratory and research



DELTA F DF-500 Range

HIGH PURITY

LEADING ULTRA-TRACE PPT O₂ ANALYZER RANGE

Verified by independent experts as measuring O₂ to the lowest ppt levels available, the DF-500 analyzer range delivers the premium performance in ultra-trace O₂ measurement. Consisting of the DF-550E NanoTrace and DF-560E NanoTrace II, the NanoTrace series delivers exceptional O₂ measurements at trace and ultra-trace ppt levels.

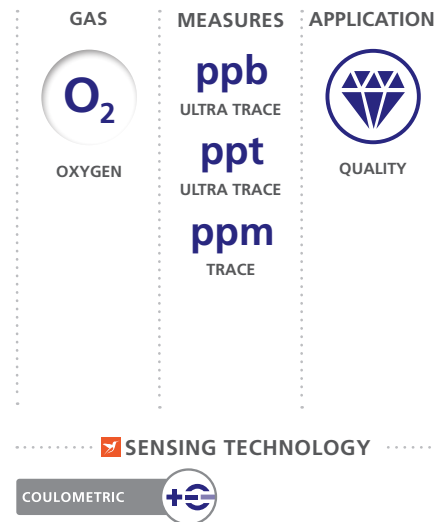


FEATURES AND BENEFITS

- The industry standard for the reliable measurement of O₂ in semiconductor manufacture
- Fast response and quick upset recovery ensures ultimate performance
- Options include flexible configurations and hand-carry portable option

APPLICATIONS

- Continuous quality control monitoring
- Inert gases control checks for electronics grade gases
- Post purifier quality certification
- Leak detection for electronics grade gases



DELTA F DF-700 Range

HIGH PURITY

TUNABLE DIODE LASER (TDL) TRACE MOISTURE ANALYZER RANGE

A sophisticated process moisture analyzer range which offers users the comprehensive solution for trace and ultra-trace moisture measurement, the DF-700 series combines the latest TDL Absorption Spectroscopy technology, a robust measuring cell and a true baseline reference for highly accurate moisture measurement.

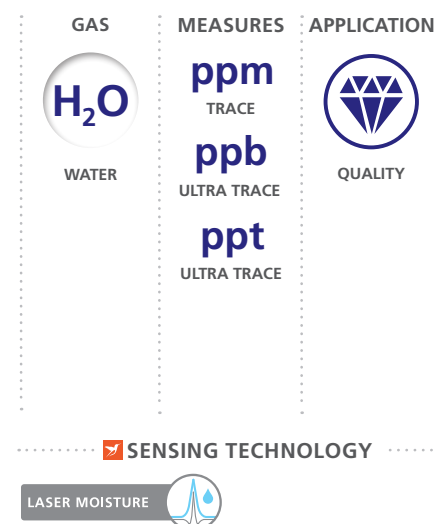


FEATURES AND BENEFITS

- Exceptional range from 100 ppt to 20 ppm moisture level readings depending on the model
- Only true Laser Absorption Spectroscopy technology in the market space which is unaffected by gas contaminants that plague CRDS laser systems
- TDLAS line lock technology keeps the laser on the moisture peak centroid measuring the entirety of the moisture's mass under the Voigt curve

APPLICATIONS

- 730: Quality control of HCl gas
- 740: Analysis of electronics-grade NH₃ specialty gas
- 745: Inert gases leak detection for LED and LCD plants
- 745 SGMax: Specialty gas cylinder quality control
- 749: HP bulk gases used in semiconductor applications
- 750: Bulk UHP gas CQC for semiconductor fabs
- 760: O₂ and H₂O monitoring in UHP bulk gases used in semiconductor applications



> GAS MEASUREMENT GUIDE

SERVOTOUGH	NH ₃	Ar	CO	CO ₂	He	C1-C6	NMHC	H ₂	HCl	HF	H ₂ S	CH ₄	NO	NOx	NO ₂	N ₂
Oxy 1800																
Oxy 1900																
OxyExact 2200																
SpectraScan 2400			%CV	%CV		%CV					%CV					
SpectraExact 2500	%		%ppm	%ppm		%			%ppm			%	%ppm			
FluegasExact 2700			ppm													
Laser 3 Plus Ammonia	ppm															
Laser 3 Plus Combustion			ppm									%				
Laser 3 Plus Process																
LaserSP 2930				%ppm					ppm	ppm	ppm					
LaserCompact 2940				%ppm					ppm	ppm	ppm					
LaserExact 2950	ppb		ppm	ppm					ppb	ppb	ppm					
DF-140E																
DF-320E																
DF-340E																
H2scan								%								

SERVOPRO	NH ₃	Ar	CO	CO ₂	He	C1-C6	NMHC	H ₂	HCl	HF	H ₂ S	CH ₄	NO	NOx	NO ₂	N ₂
AquaXact 1688																
AquaXact 1688 Controller																
MonoExact DF150E																
MonoExact DF310E																
4200/4210			%ppm	%ppm								%ppm				
4900 Multigas			%ppm	%								ppm	ppm			
FID																
Chroma		ppm/b	ppm/b	ppm/b	ppm/b		ppm	ppm/b				ppm/b				%ppm/b
Plasma																ppm
MultiExact 4100		%	%ppm	%ppm	%							ppm				%
MultiExact 5400			ppm	ppm												
NanoChrome		ppb/t	ppb/t	ppb/t			ppb/t	ppb/t				ppb/t				ppb/t
MonoExact TCD		%			%			%								%
NOx													ppm	ppm	ppm	
SO ₂																
HFID							ppm					ppm				

GAS DETECTION	NH ₃	Ar	CO	CO ₂	He	C1-C6	NMHC	H ₂	HCl	HF	H ₂ S	CH ₄	NO	NOx	NO ₂	N ₂
OxyDetect																

SERVOFLEX	NH ₃	Ar	CO	CO ₂	He	C1-C6	NMHC	H ₂	HCl	HF	H ₂ S	CH ₄	NO	NOx	NO ₂	N ₂
Micro i.s. 5100			%	%												
MiniMP 5200				%												
MiniHD 5200			%	%												
MiniFoodPack 5200				%												

DELTA F	NH ₃	Ar	CO	CO ₂	He	C1-C6	NMHC	H ₂	HCl	HF	H ₂ S	CH ₄	NO	NOx	NO ₂	N ₂
DF-500 Range																
DF-700 Range																

MEASUREMENT TYPE: PERCENT/PARTS PER MILLION/PER BILLION/PER TRILLION/BY VOLUME/DEW POINT

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N ₂ O	O ₂	C ₃ H ₆	THC	H ₂ O	SO ₂	KEY APPLICATIONS	PAGE
	%					■ Waste water treatment ■ Food storage ■ Marine inerting applications ■ Inert blanketing	13
	%					■ Process control ■ Flare stack analysis ■ Vapor recovery ■ Safety-critical oxidation	13
	%					■ Oxidation control reactions ■ EO, PTA and EDC manufacturing ■ Catalyst regeneration ■ Solvent recovery	13
						■ BTU/Wobbe content measurement ■ Gas turbine, engines, fuel cells ■ Flare stack monitoring	14
%ppm		%	%	%		■ Water in EDC/solvents ■ Ethylene production ■ TDI production ■ Chlorine production	14
	%					■ Process heaters ■ Utility boilers ■ Thermal crackers ■ Crematoria and incinerators	14
						■ Process heaters ■ Incinerators ■ Power stations ■ Furnaces	15
	%					■ Process heaters ■ Incinerators ■ Power stations ■ Furnaces	15
	%					■ Oxidation control ■ Inerting ■ Safety monitoring ■ Flare gas monitoring ■ Combustion control (<500°C) ■ Coal to chemical	15
				% ppm		■ Emission control systems for CEMS ■ Combustion control systems for process heaters and crackers ■ Ammonia slip control in DeNOx plants	16
				% ppm		■ Chemical reactor – inert gas control ■ Moisture in VCM ■ Natural gas contaminants – H ₂ O, CO ₂ , H ₂ S	16
ppm				ppm		■ HF and HCl impurity monitoring in process gas ■ Monitoring H ₂ S during biogas production ■ H ₂ O and H ₂ S in natural gas	16
ppm						■ Reactor process control ■ Pressure swing absorber nitrogen skids ■ Blanketing and inerting	17
ppm/b						■ Hydrogen production ■ Polypropylene production ■ Polyethylene production ■ Oil refining ■ Petrochemical applications	17
ppm/b						■ Pressure swing absorber N ₂ skids ■ Reactor process control ■ Blanketing and inerting ■ Petrochemical process monitoring	17
						■ Refinery ■ Petrochemical ■ Manufacturing ■ Industrial gas supply	18

N ₂ O	O ₂	C ₃ H ₆	THC	H ₂ O	SO ₂	KEY APPLICATIONS	PAGE
				ppmvd/p		■ Glove boxes ■ Solder reflow ovens ■ Compressed air generation ■ Ethylene production	18
				ppmvd/p		■ Glove boxes ■ Solder reflow ovens ■ Compressed air generation ■ Ethylene production	18
	ppm/b					■ Glove boxes ■ Heat treating ■ Solder reflow ovens ■ Industrial gas production	19
	% ppm					■ Air separation units ■ Medical/industrial gases ■ Specialty gas blending	19
ppm	%					■ Product quality validation in hydrogen plants ■ HyCO process control ■ Bottling/filling plants producing flammable gas blends	19
ppm	%				ppm	■ Utility boilers ■ Clinical waste incinerators ■ Chemical incinerators ■ Mobile labs	20
			ppm			■ Cryogenic air separation ■ Process control ■ Food gas manufacture ■ Product validation	20
	ppm/b					■ Medical gas production ■ Air separation unit ■ Cryogenic truck loading station ■ High purity gas production	20
						■ Argon production ■ Track loading ■ Pure gas bottling ■ Specialty gas laboratories	21
ppm	% ppm			ppm		■ Product purity on air separation unit ■ Validation of medical O ₂ , N ₂ , air and He ■ Process control on air separation unit	21
ppm	% ppm					■ Validation of medical O ₂ , N ₂ , and air ■ Process control on air separation unit	21
	ppb/t					■ Semiconductor production – Stationary analytical systems ■ UHP gas production – Quality control measurements	22
						■ Validation on industrial processes ■ Hydrogen purity ■ Bottling/filling plant applications	22
						■ Scrubber efficiency ■ Turbine/generator feedback control ■ SCR/SNCR feedback control	22
					ppm	■ Continuous emissions monitoring (CEMS) ■ Ambient air monitoring	23
			ppm			■ Compliance monitoring and testing ■ VOC abatement ■ Scrubber efficiency	23

N ₂ O	O ₂	C ₃ H ₆	THC	H ₂ O	SO ₂	KEY APPLICATIONS	PAGE
	%					■ Pharmaceutical plants ■ Helium production and storage ■ Semiconductor facilities ■ Laboratories and universities	23

N ₂ O	O ₂	C ₃ H ₆	THC	H ₂ O	SO ₂	KEY APPLICATIONS	PAGE
	%					■ Refineries – catalytic cracker regeneration ■ Process monitoring ■ Inerting applications	24
	%					■ Laboratories and research ■ Air separation and gas bottling plants ■ Transfilling ■ Combustion analysis	24
	%					■ Physiology studies ■ Universities ■ Combustion optimization ■ Medical gas verification	24
	%					■ Equilibrium Modified Atmosphere Packaging (EMAP) fresh consumable produce testing ■ Laboratory and research	25

N ₂ O	O ₂	C ₃ H ₆	THC	H ₂ O	SO ₂	KEY APPLICATIONS	PAGE
	ppb/b/t					■ Continuous quality control monitoring ■ Post purifier quality certification ■ Leak detection for electronics grade gases	25
	ppb/b/t			ppb/b/t		■ Continuous quality control monitoring ■ Bulk gas cylinder quality control ■ Trace moisture analysis	25

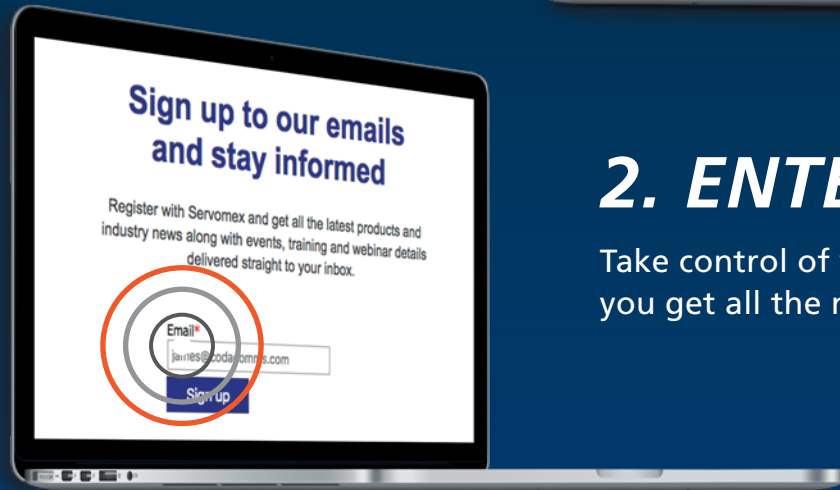
MEASUREMENT TYPE: PERCENT/PARTS PER MILLION/PER BILLION/PER TRILLION/BY VOLUME/DEW POINT

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