

# SERVOPRO MonoExact DF310E

**NEXT-GENERATION DIGITAL OXYGEN ANALYZER DESIGNED FOR INDUSTRIAL GAS APPLICATIONS  
COMBINING TRACE-LEVEL MEASUREMENT WITH NEW PERFORMANCE AND OPERATIONAL ADVANTAGES**



**MonoExact DF310E**  

The MonoExact DF310E has been designed specifically to accurately measure oxygen in various industrial gas (IG) applications including nitrogen, argon and hydrogen production, tanker transfill, specialty gas blending, electronic gases and more. Combining Servomex's latest advances in sensor and analyzer design into an advanced new platform, the DF310E is easy to operate and integrate into a wide range of systems.

Built around the latest innovations in software and hardware - including a non-depleting Paramagnetic and updated Coulometric digital oxygen sensor - MonoExact DF310E builds on the original DF-310E to give new operational and maintenance benefits that improves user control and reduces cost of ownership.

Offering comprehensive analog and digital communication options for simple integration into a wide range of systems, MonoExact DF310E is backward-compatible with existing DF-310E installations, ensuring it complies with existing standards and customer agreements without the need for re-testing or re-qualification.

## Flexible

- Back-compatible with DF-310E platform, including hardware wiring inputs and gas inlets
- Analog and digital outputs - 4-20mA, RS232, RS485 and advanced digital communications
- including Ethernet, Modbus TCP/IP and Profibus
- Optional integration of external AquaXact aluminum oxide CO<sub>2</sub> moisture sensor probe to allow for two measurements with one analyzer

## Easy to use

- Compact footprint for simple integration
- Advanced touchscreen GUI for intuitive hands-on setup and operation
- Servomex proprietary software makes reporting and parameter control simple

## Low cost of ownership

- Field proven Servomex Coulometric electrochemical performance and reliability
- Non-depleting Paramagnetic sensor option
- Five year replacement warranty on electrochemical sensor
- Minimal training requirements

## Unrivalled performance

- Utilizes enhanced Hummingbird sensing technology for precision process measurement
- 100, 1000 and 10000 ppm ranges available (Coulometric) / 0-25% Q (Paramagnetic)
- Manufactured by Servomex - over 60 years' experience innovating and pioneering gas analysis and thousands of units used in the field every year

## Benchmark compliance

- Complies with Low Voltage, EMC and applicable directives
- European and US Pharmacopeia compliant (Coulometric and Paramagnetic)

**Learn more about the SERVOPRO MonoExact DF310E**  
Visit [servomex.com/MonoExactDF310E](http://servomex.com/MonoExactDF310E)



# PRODUCT OVERVIEW:

## A new analyzer platform, optimized for performance and ease of use

IG customers requiring accurate process control and product qualification rely on the precision measurements provided by Servomex's DF and SERVOPRO analyzers. MonoExact DF310E forms part of Servomex's next-generation industrial analyzer platform, which advances and standardizes a complete, integrated IG analysis capability through the latest innovations in software, hardware and sensor design.

By delivering the same high quality measurements and ensuring backwards compatibility with previous analyzers, customers now get the choice of PPM or % measurements through Servomex's Coulometric and Paramagnetic sensors respectively. Backwards compatibility with the DF-310E means training requirements are minimized, re-testing and re-qualification problems are avoided and products meets the high standards of global supply agreements.

## An upgraded sensor for reduced maintenance

At the heart of the MonoExact DF310E is Servomex's Hummingbird Coulometric sensor, which builds on the original DF Coulometric sensor's ultra-accurate trace oxygen measurements. The field proven sensor design provides the same superior accuracy and precision that DF-310E customers have come to expect from Servomex.

The Hummingbird Paramagnetic sensor is also non-depleting and requires no maintenance, greatly lowering cost of ownership.

## Ultimate control, ultimate connectivity

The MonoExact DF310E is built around Servomex's new advanced user interface, which offers immediate hands-on control via a high brightness touchscreen display. Intuitive to use, Servomex's icon driven software is optimized for a simple user journey, with the touchscreen GUI making reporting or adjusting control parameters effortless. The MonoExact DF310E touchscreen GUI is designed to display up to two measurements simultaneously; oxygen and moisture via the AquaXact external probe.

Analog and digital communications compatibility is provided through traditional 4-20mA, RS232 and RS485, while Ethernet, Modbus TCP/IP and Profibus compatibility means all common advanced digital protocols are available. This means MonoExact DF310E is as simple to integrate into brand new systems as it is to exchange with older DF-310E units - the latter made even easier by a back plate design that makes swap out simple.

## ALTERNATIVE PRODUCTS

The SERVOPRO product range features a number of options designed to meet your application needs:

### MonoExact DF150E



Next-generation Coulometric oxygen analyzer, designed specifically for use in various industrial applications including glove boxes, heat treating, solder reflow ovens, laboratory and industrial gas applications. Updated sensor design requires only an annual electrolyte refill.

### MultiExact 5400



Delivering stable, high performance monitoring across all key industrial gases, the MultiExact's dual measurement capability benefits from a choice of four leading-edge sensing technologies, including new GFx sensing capability for CO, CO<sub>2</sub> and CH<sub>4</sub>.

### Chroma



Utilizing a unique, non-depleting plasma emission detector, the Chroma is a mainframe customized to your application. Offering multi-component trace measurement at ppb, ppm or % level, the Chroma can monitor H<sub>2</sub>, O<sub>2</sub>, N<sub>2</sub>, Ar, CH<sub>4</sub>, CO, CO<sub>2</sub> and NMHC impurities in H<sub>2</sub>O<sub>2</sub>, N<sub>2</sub>, Ar and He.

## KEY APPLICATIONS

- Nitrogen production
- Argon production
- Hydrogen production
- Tanker Transfill applications
- Speciality gas blending
- Electronic gas verification



# PRODUCT DATA:

OPTIONS	DESCRIPTION	SPECIFICATION
Output	Non-isolated 0-10V DC	Supplied as standard
Analog outputs	Various options	Isolated 4-20mA DC output or isolated 4-20mA output, which jams at 2mA when sensor is off or disconnected
Output range - Coulometric	Output parameters	Any range between 0-10,000 (please note: configuration dependent)
Output range - Paramagnetic	Output parameters	0-100%
Alarms	Low flow, concentration, span reference and electrolyte	Up to 8 sensor specific alarms: concentration (high/low), flow, temperature and span reference
Sample pressure regulator	Optional Outboard 316 stainless steel pressure regulator	3,000psig/208 BarA inlet capacity; 0-10psig/1.7BarA adjustable outlet pressure requires 5psig/1.36BarA minimum inlet pressure
Scale range	User selectable	4-20mA output with ID range
Pump	Internal or external diaphragm pump for negative pressure sampling	Negative pressures up to 2psig/1.05mm Hg vacuum or vent pressures to 3psig/155mm Hg
Mounting	Various options for application flexibility	Panel mount, 19" rack mount, dual 19" rack mounting options
Relay contacts	Up to 8 independently assigned contacts	Rated at 1.0 amp at 30 volts AC or DC
<b>ACCESSORIES</b>	<b>ACCESSORIES AVAILABLE FOR SPECIFIC APPLICATIONS - CONTACT YOUR LOCAL SERVOMEX BUSINESS CENTER</b>	

MONITORING PERFORMANCE		
Gas	O <sub>2</sub> purity (ppm)	O <sub>2</sub> control (%)
Technology	Coulometric	Paramagnetic
Model	Standard	Standard
Range	0-100, 0-1000 or 0-10,000ppm	0-25%
Accuracy (intrinsic error) FSD	±3% of the reading or 0.05% of the full range for the 0-100ppm, 0-1000ppm and 0-10,000ppm ranges whichever is larger. The accuracy for the 0-100ppm HR sensor is ± 3% of reading or ± 10 ppb whichever is larger.	±0.1% Q
Zero drift/month	Negligible	±0.05% Q/week
T <sub>90</sub> in secs.	<20 seconds at 0.75liters/min	<10 seconds at 0.2liters/min

TUNABLE DIODE LASER



FLAME IONISATION DETECTOR



GAS CHROMATOGRAPHY



PLASMA



LASER MOISTURE



COULOMETRIC



SPECTROSCOPIC



# PRODUCT DATA: MonoExact DF310E

## SAMPLE FOR MEASUREMENTS

<b>Sample for measurement</b>	Sample must be oil free, non-corrosive and non-condensing
<b>Sample pressure</b>	0.2 - 1psig
<b>Dew point</b>	5°C/9°F below minimum ambient
<b>Particulates</b>	Filtered to 2µm

### Size:

- 206mm (8.1") Wide x 131 (5.2") High x 245mm (9.7") Deep

### Weight:

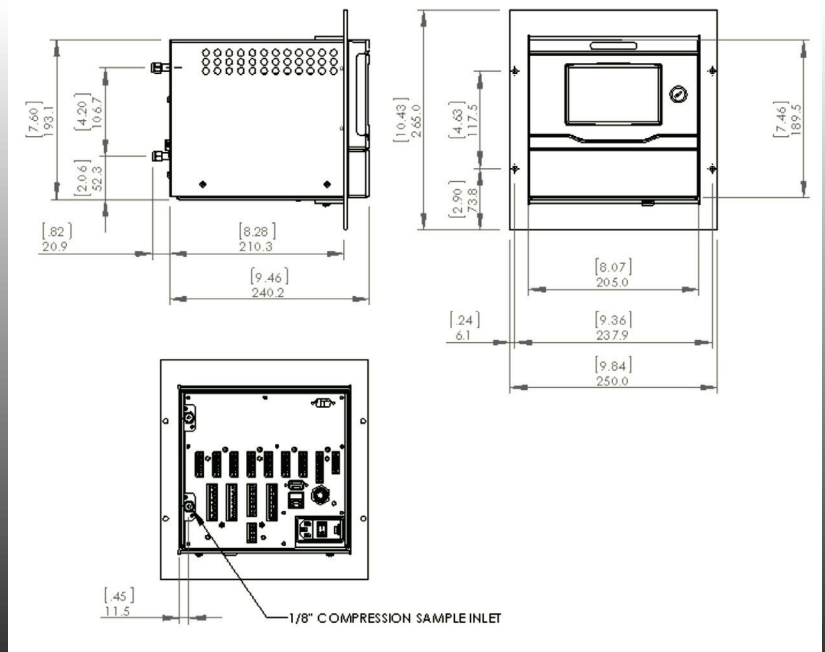
- 4.3kg (9.5lbs)

### Operating Temperature:

- 0°C - 45°C/32°F - 113°F

### Compliance:

- IEC 61010-1
- Overvoltage Category II, Pollution Degree 2
- EU EMC Directive
- EU Low Voltage Directive



*These analyzers are not intended for any form of use on humans and are not medical devices as described in the Medical Devices Directive 93/42/EEC.*

**Please note:** This document was updated in December 2015. While every effort has been made to ensure accuracy, no responsibility can be accepted for errors or omissions. Data may change, as well as legislation, and you are strongly advised to obtain copies of the most recently issued regulations, standards and guidelines. This document is not intended to form the basis of a contract.



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