



Gas	Measures	Application
Oxygen	Percent	Process control
Moisture	Trace ppm	Quality
	Ultra Trace ppb	



SENSING TECHNOLOGY

Coulometric



Paramagnetic



Aluminum Oxide *



Key applications

- Industrial gas manufacturing
- Tanker transfil
- Specialty gas blending

Next generation coulometric oxygen analyzer designed specifically for use in a diverse range of industrial applications

Unrivalled performance

- MonoExact DF310E O₂ LDL
 - 0-100HR: 3 ppb
 - 0-100: 50 ppb
 - 0-1000: 250 ppb
 - 0-10,000: 2.5 ppm
 - 0-25% paramagnetic: $\pm 0.1\%$
- Up to 5-year coulometric sensor warranty
- Non-depleting coulometric and paramagnetic sensors

Flexible

- Compatible with DF-310E platform, including hardware wiring inputs and gas inlets
- Analog and digital outputs 4-20mA & 0-10 VDC, RS232, RS485 (Modbus) and advanced digital communication including Modbus Ethernet TCP/IP and PROFIBUS[†]
- Third-party integration of external aluminum oxide (Al₂O₃) moisture sensor probe to allow for two measurements with one analyzer*
- Battery and pump options available but, not in same analyzer

‡ Certain background gases must be configured with stainless steel inlet and outlet plumbing, consult Servomex applications

† Configuration dependent

* Contact Servomex for details

Easy to use

- Plug and play sensors
- Large library of compatible gases[‡]
- Intuitive icon driven touchscreen user-interface

Low cost of ownership

- Field upgradable relay, alarm and communication protocols
- Downloadable system file log and diagnostics means we can assess issues and upgrade remotely
- Product can be upgraded in the field as your operational needs change
- Minimal training requirements

Benchmark compliance

- In compliance with Low Voltage, EMC, CE and CSA applicable directives
- European and US Pharmacopeia compliant (coulometric and paramagnetic)
- Manufactured by Servomex - over 70 years' experience innovating, and pioneering gas analysis and thousands of units used in the field every year

For more information visit servomex.com/contact

SERVOPRO

MonoExact DF310E

Product overview

Safe area

The definitive solution for IG gas production and bottling and blending

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

Simple maintenance and reduced ongoing costs

Built around the latest innovations in sensing technology combined with advance software and hardware - including a non-depleting paramagnetic and digital coulometric oxygen sensor - MonoExact DF310E builds on the original DF-310E with touchscreen operation, features to aid in commissioning and self-diagnostics monitoring benefits that improves user control and reduces cost of ownership. Updating firmware, downloading diagnostic files and copying the analyzer setup to transfer to another unit of identical configuration takes just a few clicks.

A no compromise solution

Offering comprehensive analog and digital communication options for simple integration into a wide range of systems. Includes a Flat Line Alarm that monitors sensor measurements at LDL thresholds.

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.

These analyzers are not intended for any form of use on humans and are not medical devices as described in the Medical Devices legislation or regulation.

Please note: Whilst every effort has been made to ensure accuracy, no responsibility can be accepted for errors and 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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Useful links:



servomex.com/service



servomex.com/systems



servomex.com/expert-guidance





Specifications

Technology	Coulometric electrochemical cell and paramagnetic with third-party Al ₂ O ₃ moisture probe				
Performance					
Gas measured	O ₂ trace (ppm)				O ₂ control (%)
Sensor technology	Coulometric				Paramagnetic
Sample gases	H ₂ , He, CH ₄ , CO, N ₂ , Ar and a host of fluorocarbons and slightly acidic HP gases**				Various gases except for H ₂ , CH ₄ , or CO*
Range	0-100 High Resolution, 0-100, 0-1000 or 10,000ppm				0-25%
	High Resolution 0-100ppm	0-100ppm	0-1000ppm	0-10,000ppm	
Intrinsic error (accuracy)	±3% of the reading or ± 10ppb whichever is larger	±3% of the reading or ± 50ppb whichever is larger	±3% of the reading or ± 250ppb whichever is larger	±3% of the reading or ± 2.5ppm whichever is larger	±0.1% O ₂
Response time (T₉₀)	~30 seconds at 0.50l/min				<10 seconds at 0.2l/min
Zero drift/month	Negligible				±0.05% O ₂ /week
LDL	3ppb	50ppb	250ppb	2.5ppm	±0.1%
Signal outputs/inputs					
Analog outputs	Isolated 4-20mA DC output or isolated 0-10V DC output, which jam at 0, 2, 4 or 21.5mA				
Output range	Coulometric and Paramagnetic output parameters: adjustable across full sensor range				
Alarms	Up to 8 sensor specific alarms: concentration (high/low), flow, temperature and span/zero reference; also as electrolyte reminder can be set on a timer†				
Fault status signals	Over 30 different fault statuses being self-monitored which are recorded within the system files and report if tripped to the analyzers home screen				
Digital communications	RS232, RS485 (Modbus) and advanced digital communication including Modbus Ethernet TCP/IP and PROFIBUS†				
Relay contacts	Up to 16 independently assigned contacts rated at 1.0 amp and up to 30V DC or AC†				
Sample condition					
Gas	Sample must be oil free, non-corrosive and non-condensing (can handle slightly acidic gases)				
Gas temperature	0°C to +45°C (+32°F to +113°F)				
Particulate size	Filtered to 2µm				
Maximum dew point	+5°C/+9°F below minimum ambient				
Zero gas	5 or 5.5 9s pure N ₂ is preferable				
Span gas	Optimal linearity achieved when calibrated to 40-80% of full range				
Sample pressure	Flow driven: 1.4 - 6.9 kPa; 0.014 - 0.07 bar; 0.2 - 1 psig Pressure driven: 172.36-310.26 KPa; 1.72-3.10 bar; 25-45 psig Max sensor cell: 34.5 kPa; 0.35 bar; 5 psig				

* Consult the manual for full list of gases supported

** Consult with Servomex for other gases not listed

‡ Certain background gases must be configured with stainless steel inlet and outlet plumbing, consult Servomex applications

† Configuration dependent

The performance specification has been written and verified in accordance with the international standard IEC 61207-1:1994 "Expression of performance of gas analyzers"

Operating environment	
Temperature	0°C to +45°C (+32°F to +113°F)
Relative humidity	95% relative humidity, must be a non-condensing environment
Warm up time	New electrolyte 60 min, after that only the residence time for sample to reach sensor
Max altitude	6,500 ft. or 2,000m above sea level
Physical	
Size	205mm (8.0") Wide x 193mm (7.6") Height x 240mm (9.5") Deep (without handle and feet)
Weight	4.3kg (9.5lbs)
Mounting	Benchtop, panel mount, 19" rack mount, dual 19" rack mounting
Supply voltage	100-120Vac or 220-240Vac, 50/60Hz
Storage temperature	0°C to +45°C (+32°F to +113°F)
Sensor storage conditions	We recommend that the analyzer be operated as intended, within 6 months of delivery

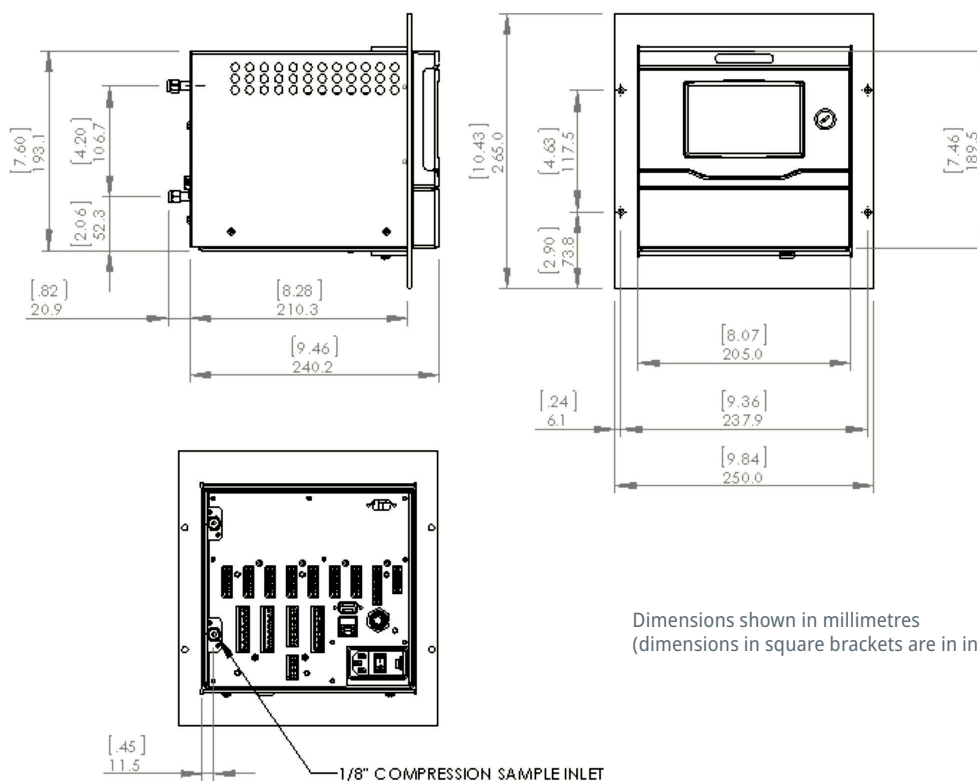
Sample wetted materials

Analyzer fitted with	316L stainless steel, PFA and Acrylic
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Compliance

EC directives	This product complies with the EMC Directive, the Low Voltage Directive, and all other applicable directives
Electrical safety	Electrical safety to IEC 61010-1 and CSA Certified; EU EMC and Low Voltage Directive Rated for "Overvoltage Category II" and "Pollution Degree 2"

Dimensional drawings



Dimensions shown in millimetres
(dimensions in square brackets are in inches)

Configuration		
Standard Variant (SV02)	The pre configured standard variant (SV02) covers the most common applications and frequently ordered options.	
User Configured (UC)	Other analyzer configuration options not covered by the above standard variant, including some communications protocols and corrosion prevention purge options.	
DF310E variants	SV02	UC
Built to stock	☒	☐
Type	☐ Dual rack mount ☐ No bench mount ☐ Panel mount ☐ Single rack mount ☐ Bench top unit	☐ ☐ ☐ ☐ ☐
Channel 1		
Gas	O ₂	☒
Measurement Range	0-100 ppm high res (ME) 0-100 ppm 0-1000 ppm 0-10000 ppm 0-25% V/V non-flammable	☒ ☐ ☐ ☐ ☐
Transducer Type	Coulometric w/SS sample lines Paramagnetic - O ₂ control	☐ ☐
Options	Flow driven Flow driven w/flow switch Pressure driven (orifice) Pressure driven (orifice) w/flow switch Pump driven Pump driven w/flow switch	☐ ☐ ☐ ☐ ☐ ☐
Hardware options		
Power cord	None USA Europe UK	☐ ☐ ☐ ☐
Stainless steel tags	None Required	☐ ☐
Battery backup	None Required	☒ ☐
Pump (O ₂)	None Required	☒ ☐
Pressure regulator (O ₂)	None Standard High purity regulator	☐ ☐ ☐
Stainless steel filter (O ₂)	None Required	☐ ☐
VCR adapter (O ₂)	None Required	☐ ☐
Adapter 1/4" (O ₂)	None Required	☐ ☐
Adapter 3/4" (O ₂)	None Required	☐ ☐
Extra option board	None Required	☐ ☐
Tick a single box for each selectable option		

- ☐ Option selectable
☒ Option not available in that variant
☒ Pre-selected option

Configuration continued			
DF310E variants		SV02	UC
Software options			
Serial communications	None	☐	☐
	RS232 communication	☐	☐
	RS485 communication with Modbus	☐	☐
	RS232 & RS485 communication combo	☐	☐
	Profibus	☒	☐
Modbus TCP/IP	None	☐	☐
	Required	☐	☐
Configurable alarms	None	☐	☐
	Two alarms	☐	☐
	Four alarms	☐	☐
	Eight alarms	☐	☐
	Sixteen alarms	☒	☐
Isolated output	None	☐	☐
	Isolated 4-20mA	☐	☐
	Isolated 2-20mA	☐	☐
Autocal	None	☐	☐
	Required	☐	☐
Relay contacts	None	☐	☐
	2 relay contacts	☐	☐
	4 relay contacts	☐	☐
	8 relay contacts w/connectors	☐	☐
	16 relay contacts w/connectors	☐	☐
Gas scale factor	Manual	☒	☐
	Advanced	☐	☐
Certificate of Calibration	Not required	☐	☐
	Required	☐	☐
Coulometric cell warranty	1 year standard	☒	☒
	5 year extended	☐	☐
Tick a single box for each selectable option			

- ☐ Option selectable
- ☒ Option not available in that variant
- ☒ Pre-selected option

We're ready to help

Whatever your gas
analysis requirements,
wherever you are.

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Analysis that **empowers**

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