



GAS	MEASURES	APPLICATION
OXYGEN	PERCENT	PROCESS CONTROL
MOISTURE	TRACE PPM	QUALITY
	ULTRA TRACE PPB	

SENSING TECHNOLOGY



KEY APPLICATIONS

- Industrial gas manufacturing
- Tanker transfil
- Specialty gas blending*

NEXT-GENERATION DIGITAL OXYGEN ANALYZER, COMBINING TRACE-LEVEL MEASUREMENT WITH OPERATIONAL BENEFITS

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: ± 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†
- Optional integration of external AquaXact aluminum oxide (Al₂O₃) moisture sensor probe to allow for two measurements with one analyzer*
- Battery and pump options available but, not in same analyzer*

* Not for use with H₂, CH₄, or CO background gases

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

† Configuration dependent

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 please contact us
Visit servomex.com/contact

PRODUCT OVERVIEW

SERVOPRO MonoExact DF310E

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 transfer, 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 advanced 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 improve user control and reduce 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.

USEFUL LINKS



P8TDSMEDF310E Rev. 4 Date: 08/23

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: 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.

Servomex has a policy of constant product improvement and reserves the right to change specifications without notice. © Servomex Group Limited. 2023. A Spectris company. All rights reserved.

TECHNICAL DATA SHEET



SERVOPRO MonoExact DF310E

SPECIFICATIONS

SAMPLE GASES	H ₂ , He, CH ₄ , CO, N ₂ , Ar and a host of fluorocarbons and slightly acidic HP gases [‡]				
TECHNOLOGY	Coulometric electrochemical cell and paramagnetic* with optional Al ₂ O ₃ moisture measurement*				
PERFORMANCE					
Gas measured	O ₂ trace (ppm)				O ₂ control (%)
Sensor technology	Coulometric				Paramagnetic*
Range	0-100 High Resolution, 0-100, 0-1000 or 10,000ppm				0-25%
Intrinsic error (accuracy)	High Resolution 0-100ppm	0-100ppm	0-1000ppm	0-10,000ppm	
	±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				

* Not for use with H₂, CH₄, or CO background gases

‡ 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"



SERVOMEX.COM

SERVOMEX
a spectris company

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

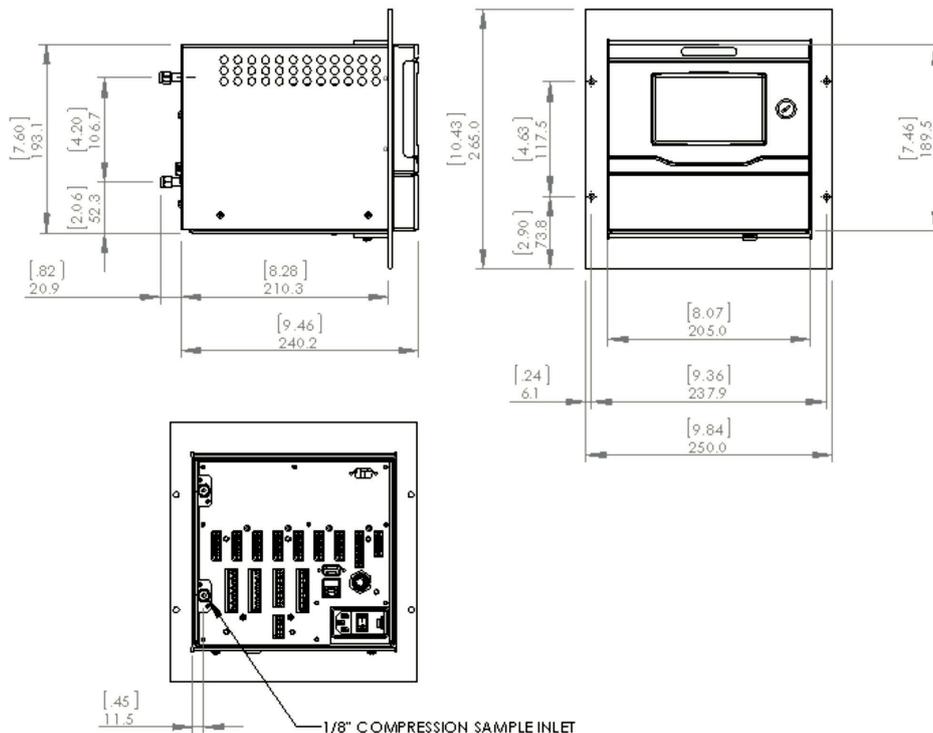
SAMPLE WETTED MATERIALS

ANALYZER FITTED WITH	316L stainless steel, PFA and Acrylic
----------------------	---------------------------------------

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		<input checked="" type="checkbox"/>	<input type="checkbox"/>
Type	Dual rack mount No bench mount Panel mount Single rack mount Bench top unit	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
CHANNEL 1			
Gas	O ₂	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Measurement Range	0-100 ppm high res (ME) 0-100 ppm 0-1000 ppm 0-10000 ppm 0-25% V/V non-flammable	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Transducer Type	Coulometric w/SS sample lines Paramagnetic - O ₂ control	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>
Options	Flow driven Flow driven w/flow switch Pressure driven (orifice) Pressure driven (orifice) w/flow switch Pump driven Pump driven w/flow switch	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
CHANNEL 2			
Gas	None Moisture	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>
Measurement Range	None Universal	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>
Transducer Type	None AquaXact 1688	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>
Options	None Sample block, NPT 1/4" Swagelok Sample block, VCO fittings Sample block, VCR fittings Sample system #1 Sample system #2 Sample system #3 Sample system #4 Sample system #5	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Transducer cables	None 5 meter cable digital 10 meter cable digital 100 meter cable digital	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
HARDWARE OPTIONS			
Power cord	None USA Europe UK	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Stainless steel tags	None Required	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>
Battery backup	None Required	<input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>

Tick a single box for each selectable option

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



CONFIGURATION CONTINUED		SV02	UC
DF310E VARIANTS			
HARDWARE OPTIONS			
Pump (O ₂)	None	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Required	<input type="checkbox"/>	<input type="checkbox"/>
Pressure regulator (O ₂)	None	<input type="checkbox"/>	<input type="checkbox"/>
	Standard	<input type="checkbox"/>	<input type="checkbox"/>
	High purity regulator	<input type="checkbox"/>	<input type="checkbox"/>
Stainless steel filter (O ₂)	None	<input type="checkbox"/>	<input type="checkbox"/>
	Required	<input type="checkbox"/>	<input type="checkbox"/>
VCR adapter (O ₂)	None	<input type="checkbox"/>	<input type="checkbox"/>
	Required	<input type="checkbox"/>	<input type="checkbox"/>
Adapter 1/4" (O ₂)	None	<input type="checkbox"/>	<input type="checkbox"/>
	Required	<input type="checkbox"/>	<input type="checkbox"/>
Adapter 3/4" (O ₂)	None	<input type="checkbox"/>	<input type="checkbox"/>
	Required	<input type="checkbox"/>	<input type="checkbox"/>
Transducer tip (extra) (1688)	None	<input type="checkbox"/>	<input type="checkbox"/>
	Required	<input type="checkbox"/>	<input type="checkbox"/>
Extra option board	None	<input type="checkbox"/>	<input type="checkbox"/>
	Required	<input type="checkbox"/>	<input type="checkbox"/>
SOFTWARE OPTIONS			
Serial communications	None	<input type="checkbox"/>	<input type="checkbox"/>
	RS232 communication	<input type="checkbox"/>	<input type="checkbox"/>
	RS485 communication with Modbus	<input type="checkbox"/>	<input type="checkbox"/>
	RS232 & RS485 communication combo	<input type="checkbox"/>	<input type="checkbox"/>
	Profibus	<input type="checkbox"/>	<input type="checkbox"/>
Modbus TCP/IP	None	<input type="checkbox"/>	<input type="checkbox"/>
	Required	<input type="checkbox"/>	<input type="checkbox"/>
Configurable alarms	None	<input type="checkbox"/>	<input type="checkbox"/>
	Two alarms	<input type="checkbox"/>	<input type="checkbox"/>
	Four alarms	<input type="checkbox"/>	<input type="checkbox"/>
	Eight alarms	<input type="checkbox"/>	<input type="checkbox"/>
	Sixteen alarms	<input type="checkbox"/>	<input type="checkbox"/>
Isolated output	None	<input type="checkbox"/>	<input type="checkbox"/>
	Isolated 4-20mA	<input type="checkbox"/>	<input type="checkbox"/>
	Isolated 2-20mA	<input type="checkbox"/>	<input type="checkbox"/>
Autocal	None	<input type="checkbox"/>	<input type="checkbox"/>
	Required	<input type="checkbox"/>	<input type="checkbox"/>
Relay contacts	None	<input type="checkbox"/>	<input type="checkbox"/>
	2 relay contacts	<input type="checkbox"/>	<input type="checkbox"/>
	4 relay contacts	<input type="checkbox"/>	<input type="checkbox"/>
	8 relay contacts w/connectors	<input type="checkbox"/>	<input type="checkbox"/>
	16 relay contacts w/connectors	<input type="checkbox"/>	<input type="checkbox"/>
Gas scale factor	Manual	<input type="checkbox"/>	<input type="checkbox"/>
	Advanced	<input type="checkbox"/>	<input type="checkbox"/>
Certificate of Calibration	Not required	<input type="checkbox"/>	<input type="checkbox"/>
	Required	<input type="checkbox"/>	<input type="checkbox"/>
Coulometric cell warranty	1 year standard	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	5 year extended	<input type="checkbox"/>	<input type="checkbox"/>

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

PBTDSMEDF310E Rev. 4 Date: 08/23

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

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.*

Servomex has a policy of constant product improvement and reserves the right to change specifications without notice. © Servomex Group Limited. 2023. A Spectris company. All rights reserved.