

# SERVOPRO DF-150E

HIGH PERFORMANCE PERCENT AND TRACE OXYGEN MEASUREMENTS IN PURE GAS,  
DESIGNED FOR PROCESS AND QUALITY CONTROL IN HEAT TREATMENT APPLICATIONS



## DF-150E

The DF-150E provides highly stable Coulometric sensing measurements of O<sub>2</sub> in pure gas streams and is specifically designed to meet the needs of process/quality control in heat treatment applications, glove boxes and industrial gas plants. These aspects combine to make the DF-150E highly adaptive and capable of meeting a variety of diverse application needs.

In addition to its flexible and reliable measuring response, the DF-150E offers considerable cost savings over product life, thanks to its high stability factory calibrated sensing technology, which requires only subsequent annual SPAN calibrations, with no programmable cell replacement requirement. The DF-150E can also be configured as a single or three range analyzer, for added usability.

### FLEXIBLE

- Coulometric sensing is ideal for upset prone applications
- Designed for diverse application use including process/quality control, heat treatment applications, glove boxes, industrial gas plants and laboratory applications

### EASY TO USE

- Can be configured as a single range or three range analyzer
- Factory calibrated for simplified set-up
- Simplified ongoing maintenance requirements

### LOW COST OF OWNERSHIP

- Long-life Coulometric sensor with five year warranty
- Only requires an annual SPAN calibration reducing device care costs

### UNRIVALLED PERFORMANCE

- Uses industry-leading, high stability Coulometric trace and percent O<sub>2</sub> sensing with ultra-low drift potential
- Fast speed of response in the presence of changeable sample concentrations or flow rates
- Manufactured by Servomex - over 60 years' experience innovating and pioneering gas analysis and thousands of units used in the field every year

### BENCHMARK COMPLIANCE

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

Learn more about the SERVOPRO DF-150E  
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HIGH-PERFORMANCE GAS ANALYSIS

# PRODUCT OVERVIEW: DF-150E

## HIGH STABILITY COULOMETRIC TRACE AND PERCENT MEASUREMENTS

When you work in heat treatment applications like surface mount and reflow PCB or annealing furnaces and  $N_2/Ar$  production or gas bottling, you need a robust and reliable  $O_2$  measurement technology that can offer high performance measurements and a fast speed of response, and recovery in upset conditions and changing sample and flow rates. Configuration flexibility is also advantageous, so a device that can offer single or three range analysis is attractive. No matter what your application needs, you'll want an analyzer that can reduce your ongoing costs and provide operational efficiencies, and we don't believe you should have to compromise.

## A NO COMPROMISE SOLUTION

The DF-150E is optimized to address these needs, incorporating leading-edge patented Coulometric sensing technology that provides advantages over comparable sensing principles through its ability to deliver high stability percent or trace  $O_2$  measurements in upset-prone applications. Even in changing sample and flow rates, the DF-150E can provide a fast speed of response, giving you the stability demanded by your application needs.

## SIMPLE MAINTENANCE AND REDUCED ONGOING COSTS

In addition to its flexibility and high performance provision, the DF-150E also offers excellent affordability over product life. This device comes pre-calibrated for efficient set-up and commissioning and uses a high reliability, long-life sensor with a five year warranty. Ongoing device maintenance is also reduced through the requirement of only an annual SPAN calibration, providing operational efficiencies that are as attractive as its monitoring and adaptive use.

## ALTERNATIVE PRODUCTS

The DF SERIES product range features a number of options designed to meet your application needs.

### DF-340E



Protected by a dustproof, waterproof, explosion proof enclosure with the option of removing the sensor in a NEMA 4 enclosure, the DF-340E enables  $O_2$  measurements at percent, trace and ultra-trace levels.

### DF-310E



When you require a high sensitivity digital trace  $O_2$  analyzer, choose the DF-310E. This device also uses high stability Coulometric sensors delivering reliable percent and trace  $O_2$  measurements in pure and multi-gas backgrounds.

### DF-550E NanoTrace



When an ultra-trace contaminant  $O_2$  measurement solution is required, we recommend DF-550E NanoTrace. This device is ideally suited to ultra-high purity electronic grade gas quality control monitoring.

## KEY APPLICATIONS

- Surface mounting and reflow PCB furnaces
- Annealing furnaces
- Glove boxes
- Nitrogen production
- Argon production
- Gas bottling



# PRODUCT DATA: DF-150E

OPTIONS	DESCRIPTION	SPECIFICATION
Output	Non-isolated 0-10V DC	Supplied as standard
Analog outputs	Isolated 4-20mA DC	Supplied as standard
Analog output range	Analog output parameters	Any range between 0-1ppm to 0-25% (please note: configuration dependent)
Alarms	Low flow, concentration and electrolyte	Up to 2 audible/visual concentration alarms, a choice between 1 concentration alarm and low flow alarm and an electrolyte condition alarm
Remote sensor	Permits remote sensor mounting capability	Sensor mounting in NEMA 4 enclosures up to 300m from the control unit (enclosures can be heated)
Sample pressure regulator	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
Flow control valves	Upstream flow control options	Upstream control for pressures less than 10psig/1.7BarA
Flammable sample outlet and sample filter	Stainless steel	Filter with standard or fine filter element (not available with VCR welded sample inlet)
Pump	For negative pressure sampling	Integral diaphragm pump for negative pressures up to 2psig/1.05mm Hg vacuum or vent pressures to 3psig/155mm Hg
Stab-El sensor	Designed for samples containing trace acid/ionic levels	Enables operation with trace levels of acid gases or ionic contamination. Samples containing trace acid components must use Stab-El option
Mounting	Various options for application flexibility	Panel mount, 19" rack mount, dual 19" rack mounting options
Relay contacts	Up to 2 independently assigned contacts	Rated at 5amps at 110 or 220V AC or 0.3 Amps at 30V DC for CE

## ACCESSORIES

**ACCESSORIES AVAILABLE FOR SPECIFIC APPLICATIONS  
- CONTACT YOUR LOCAL SERVOMEX BUSINESS CENTER**

## MONITORING PERFORMANCE

Gas	O <sub>2</sub> (purity)
Technology	Coulometric
Range	0-1ppm / 0-20%
Accuracy (intrinsic error) FS	±5% of the reading or 0.05% of the full range of the sensor whichever is larger
Zero drift/month	Negligible
T <sub>90</sub> in secs.	<10 seconds at 0.75liters/min



# PRODUCT DATA: DF-150E

## SAMPLE FOR MEASUREMENTS

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

## DEVICE SPECIFICATION

### Size:

- 203mm (8.0") Wide x 216mm (8.5") Height x 279mm (11.0") Deep

### Weight:

- 6.8kg (15lbs)

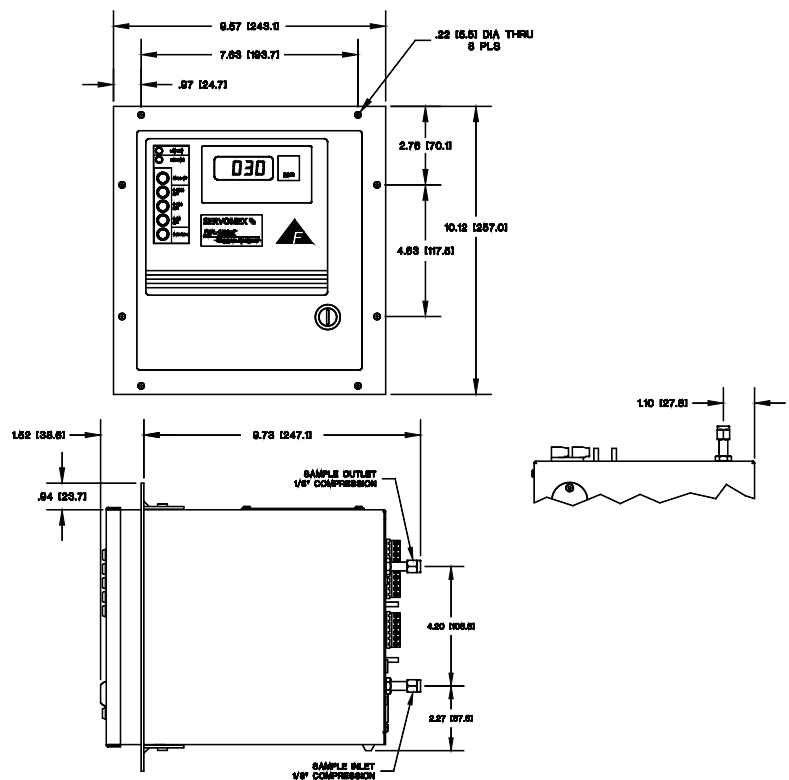
### Operating Temperature:

- 0°C - 50°C/32°F - 122°F

### Compliance:

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

## DEVICE SCHEMATIC



*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:** 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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