

# SERVOPRO

## NanoTrace DF-560E ULTRA

## Product overview

### Ultra High Purity



| Gas    | Measures                            | Application |
|--------|-------------------------------------|-------------|
| Oxygen | ppm<br>Trace ppb<br>Ultra trace ppt | Quality     |



SENSING TECHNOLOGY

Coulometric



### Key applications

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

From our ground-breaking ULTRA series, a Coulometric oxygen analyzer for electronics-grade gas analysis: low 45ppt detection and easy operation

### Unrivalled performance

- Industry-leading 45ppt Lower Detection Limit (LDL)
- Uses industry-leading low drift, highly stable, Coulometric E-sensor technology
- Fast speed of response to quickly alert operators of out of specification gas conditions

### Flexible

- Suitable for use H<sub>2</sub>, He, N<sub>2</sub>, Ar and other inert gases<sup>‡</sup>
- Sensor accommodates sample flow rate fluctuations
- Use in 18 different sample gases, standard with our gas scale factor feature

### Easy to use

- Optional calibration system for compact integration onto the rear of the analyzer
- Operable via front panel or digital communication options
- Comprehensive automated datalogging with 4 day and 30 day graphical reading records

### Low cost of ownership

- Factory calibrated sensors for simplified commissioning
- Non-depleting Coulometric sensor with industry-leading five-year warranty
- Requires only an annual SPAN calibration and quarterly RSA fluid replenishment
- Manufactured by Servomex - over 70 years experience with thousands of units used in the field

### Benchmark compliance

- RoHS 3 and REACH
- IEC 61010-1
- Overvoltage Category II, Pollution Degree 2
- EU EMC Directive
- EU Low Voltage Directive

<sup>‡</sup> Consult Servomex for other gases

For more information visit [servomex.com/contact](https://servomex.com/contact)

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### High stability coulometric trace and ultra-trace measurements

Introducing the Servomex ULTRA range of products offering unparalleled performance for CQC (Continuous Quality Control) analysis in UHP gases used in semiconductor wafer manufacturing.

When you require the measurement of ultra-trace oxygen as a contaminant, either for quality control or leak detection purposes, you need a gas analyzer that delivers performance, stability and reliability. The lowest LDL is essential, as is the ability to carry out consistent, high stability measurements in upset prone applications, where sample and flow rate fluctuations can occur. Adaptable configuration options that can measure multiple background gases and flexible portability is also needed, as is comprehensive datalogging and graphical records. 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-560E ULTRA delivers oxygen measurement to the very lowest levels, delivering users an exceptional LDL of 45ppt. This industry-leading performance is augmented by a variety of extended operational capabilities. Automated maintenance executes automatic zero and span calibrations on a scheduled basis, or executes scheduled automatic checks and notifies users when calibration is needed. An automatic maintenance log records RSA additions, sensor data, and calibration activity to ensure SPC record-keeping requirements, while automated data logging builds four-day and thirty-day graphical records of analyzer readings.

### Simple maintenance and reduced ongoing costs

The DF-560E ULTRA offers an attractive cost reduction over its product life, thanks to its pre-calibrated, long-life sensor that comes with a 5-year warranty. The DF-560E ULTRA requires only an annual SPAN calibration, with no regular cell replacement required. The DF-560E ULTRA is available with a choice of calibration options; automatic zero and span on a scheduled basis and notifications of a need for calibration; and a manual calibration system - compactly integrated on the rear of the analyzer, permitting enhanced device portability.

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.

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### Specifications

|                                  |                                                                                                                                                                                                                                                                                                                                                                                        |
|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Background gases</b>          | H <sub>2</sub> , He, N <sub>2</sub> , Ar and other inert gases‡                                                                                                                                                                                                                                                                                                                        |
| <b>Technology</b>                | Coulometric non-depleting electrochemical sensor                                                                                                                                                                                                                                                                                                                                       |
| <b>Performance</b>               |                                                                                                                                                                                                                                                                                                                                                                                        |
| Measurement range                | 0-20ppm                                                                                                                                                                                                                                                                                                                                                                                |
| Intrinsic error (accuracy)       | ±3% of reading or ±0.5ppb, whichever is greater                                                                                                                                                                                                                                                                                                                                        |
| Response time (T <sub>90</sub> ) | <30 seconds typical, <45 seconds max                                                                                                                                                                                                                                                                                                                                                   |
| Zero drift/month                 | Negligible                                                                                                                                                                                                                                                                                                                                                                             |
| Lower detection limit (LDL)      | 45ppt                                                                                                                                                                                                                                                                                                                                                                                  |
| Display resolution               | 1ppt                                                                                                                                                                                                                                                                                                                                                                                   |
| Upset recovery time              | <15 minutes to return to within 15 ppb of previous stable reading                                                                                                                                                                                                                                                                                                                      |
| <b>Signal outputs/inputs</b>     |                                                                                                                                                                                                                                                                                                                                                                                        |
| Analog outputs                   | 2 analog output options standard: isolated 4-20mA and 0-10V DC. Analog output can be configured to freeze during calibration                                                                                                                                                                                                                                                           |
| Digital outputs                  | 2-way RS-232 or RS-485                                                                                                                                                                                                                                                                                                                                                                 |
| Output range                     | Any range between 0-20 ppm to 0-2 ppb                                                                                                                                                                                                                                                                                                                                                  |
| Alarms                           | 4 O <sub>2</sub> concentration (user-configurable), electrolyte condition and temperature; flow (optional)                                                                                                                                                                                                                                                                             |
| Sensor protection                | Auto shut down to prevent damage if 100ppm O <sub>2</sub> concentration persists                                                                                                                                                                                                                                                                                                       |
| Multiple scale range             | 3 user selectable analog output ranges                                                                                                                                                                                                                                                                                                                                                 |
| Gas scale factor                 | Background gas compensation for Ar, H <sub>2</sub> , He, CO, NH <sub>3</sub> , N <sub>2</sub> O, SF <sub>6</sub> , CHF <sub>3</sub> , CF <sub>4</sub> , C <sub>2</sub> F <sub>6</sub> , CH <sub>4</sub> , C <sub>2</sub> H <sub>4</sub> , C <sub>2</sub> H <sub>6</sub> , C <sub>3</sub> H <sub>6</sub> , C <sub>4</sub> H <sub>10</sub> , C <sub>6</sub> H <sub>14</sub> , and others |
| <b>Sample conditions</b>         |                                                                                                                                                                                                                                                                                                                                                                                        |
| Gas                              | Sample must be oil free, non-corrosive and non-condensing                                                                                                                                                                                                                                                                                                                              |
| Temperature                      | 0°C to +50°C (+32°F to +122°F)                                                                                                                                                                                                                                                                                                                                                         |
| Particulate size                 | Filtered to 2µm                                                                                                                                                                                                                                                                                                                                                                        |
| Sample pressure                  | 15 – 25psig (2.03 – 2.72 Bar)                                                                                                                                                                                                                                                                                                                                                          |
| Vent                             | Vent to atmosphere                                                                                                                                                                                                                                                                                                                                                                     |
| Flow rates                       | 0.25 to 0.7 lpm, nominal 0.5 lpm                                                                                                                                                                                                                                                                                                                                                       |
| <b>Operating environment</b>     |                                                                                                                                                                                                                                                                                                                                                                                        |
| Temperature                      | Operating: 0°C to +45°C/+32°F to +113°F                                                                                                                                                                                                                                                                                                                                                |
| Relative humidity                | 0 to 95% RH non-condensing                                                                                                                                                                                                                                                                                                                                                             |
| Max altitude                     | 2,000m above sea level                                                                                                                                                                                                                                                                                                                                                                 |

‡ Consult Servomex for other gases

| Physical                  |                                                                                     |
|---------------------------|-------------------------------------------------------------------------------------|
| Size                      | 308mm (12.1") Wide x 235mm (9.3") High x 255mm (10") Deep                           |
| Weight                    | 10kg (22lbs)                                                                        |
| Mounting                  | Benchtop, panel mount or rack mount options                                         |
| 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 |
| Utilities                 |                                                                                     |
| Supply voltage            | 100-240 VAC, 50/60 Hz                                                               |

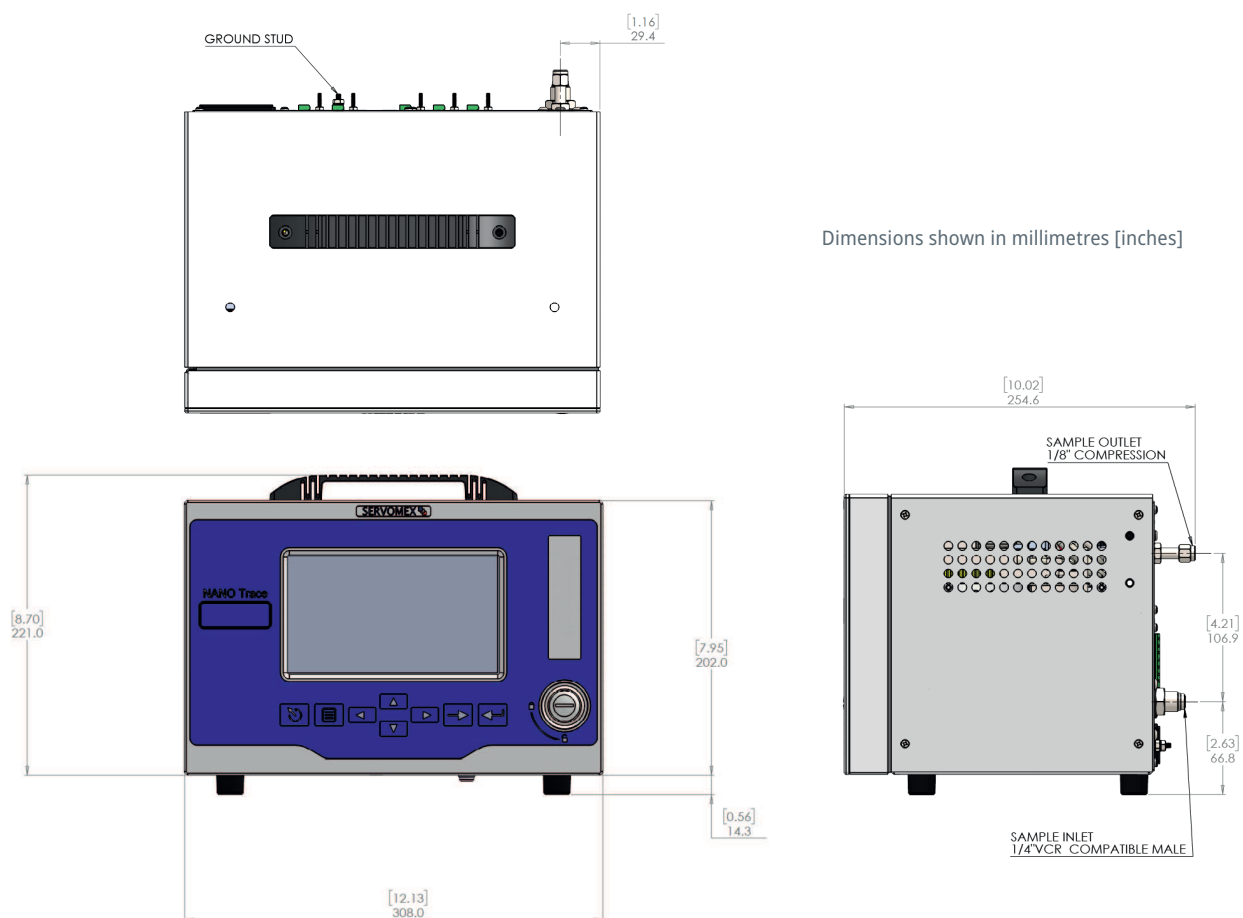
## Sample wetted materials

|                      |                                                             |
|----------------------|-------------------------------------------------------------|
| Analyzer fitted with | Stainless steel, G10, Epoxy resin, Acrylic, Buna-N, and PVC |
|----------------------|-------------------------------------------------------------|

## Compliance

|                   |                                                                                                                                                                    |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EC directives     | This product complies with the EU EMC Directive, the EU Low Voltage Directive, Overvoltage Category II, Pollution Degree 2 and all other applicable CE directives. |
| Electrical safety | Electrical safety to IEC 61010-1                                                                                                                                   |

## Dimensional drawings



## Options

| Configuration options          |                                      |                                     |
|--------------------------------|--------------------------------------|-------------------------------------|
| Sensor                         | Stab-El sensor                       | <input checked="" type="checkbox"/> |
| Power input                    | 110 - 220 VAC universal input power  | <input checked="" type="checkbox"/> |
| Calibration system             | Not required                         | <input type="checkbox"/>            |
|                                | Automated calibration system         | <input type="checkbox"/>            |
|                                | Manual calibration system            | <input type="checkbox"/>            |
| Auto control of user-cal       | Standard                             | <input checked="" type="checkbox"/> |
| Purifier                       | Standard capacity                    | <input type="checkbox"/>            |
|                                | High capacity                        | <input type="checkbox"/>            |
| Case purge                     | Not required                         | <input type="checkbox"/>            |
|                                | Required                             | <input type="checkbox"/>            |
| Mounting/cabinet               | Panel mount                          | <input type="checkbox"/>            |
|                                | Rack mount                           | <input type="checkbox"/>            |
|                                | Bench top                            | <input type="checkbox"/>            |
| Key lock                       | Not required                         | <input type="checkbox"/>            |
|                                | Required                             | <input type="checkbox"/>            |
| Communication                  | RS232 communication                  | <input type="checkbox"/>            |
|                                | RS485 communication                  | <input type="checkbox"/>            |
| Flow alarm                     | Not required                         | <input type="checkbox"/>            |
|                                | Required                             | <input type="checkbox"/>            |
| Relay contacts                 | Four relay contacts                  | <input checked="" type="checkbox"/> |
| Stainless steel outlet         | Standard                             | <input checked="" type="checkbox"/> |
| Downstream isolation valve     | Not required                         | <input type="checkbox"/>            |
|                                | Required                             | <input type="checkbox"/>            |
| UHP flow control valve         | Not required                         | <input type="checkbox"/>            |
|                                | Required                             | <input type="checkbox"/>            |
| High purity pressure regulator | Not required                         | <input type="checkbox"/>            |
|                                | Required                             | <input type="checkbox"/>            |
| Power cord                     | Not required                         | <input type="checkbox"/>            |
|                                | USA                                  | <input type="checkbox"/>            |
|                                | Europe                               | <input type="checkbox"/>            |
|                                | UK                                   | <input type="checkbox"/>            |
| Stainless steel tags           | Not required                         | <input type="checkbox"/>            |
|                                | Required                             | <input type="checkbox"/>            |
|                                | Tag text - 01                        |                                     |
|                                | Tag text - 02                        |                                     |
|                                | Tag text - 03                        |                                     |
| Certificate of calibration     | Standard                             | <input checked="" type="checkbox"/> |
| Electrolyte type               | Gold                                 | <input checked="" type="checkbox"/> |
| Electrolyte shipment method    | None required, has own stock         | <input type="checkbox"/>            |
|                                | From factory (add line item)         | <input type="checkbox"/>            |
|                                | Other Servomex plant (add line item) | <input type="checkbox"/>            |

Please tick the box for required options

# We're ready to help

Whatever your gas  
analysis requirements,  
wherever you are.

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Analysis that **empowers**

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