

# PRODUCT OVERVIEW

## SERVOPRO DF-760E NanoTrace

HIGH PURITY



### UNIQUE DUAL MEASUREMENT TRACE/ULTRA-TRACE MOISTURE/OXYGEN ANALYZER FOR QUALITY CONTROL OF UHP BULK GASES

GAS	MEASURES	APPLICATION
MOISTURE	TRACE PPM	QUALITY
OXYGEN	ULTRA TRACE PPB ULTRA TRACE PPT	

#### SENSING TECHNOLOGY

LASER MOISTURE



COULOMETRIC



#### UNRIVALLED PERFORMANCE

- Stable, accurate sensing delivers industry-leading trace measurements
- 100ppt LDL ( $H_2O$ ) / 45ppt LDL ( $O_2$ )
- Manufactured by Servomex - over 60 years' experience pioneering gas analysis thousands of units used in the field

#### LOW COST OF OWNERSHIP

- Resilient TDL and non-depleting Coulometric sensing requires minimal ongoing maintenance
- Negligible sensor drift greatly extends calibration intervals
- TDL immune from acid damage

#### FLEXIBLE

- Unique industry solution for ppt monitoring of moisture and oxygen
- Operable via front panel or digital communication options
- Broad Detection Range:  
0-20ppm – 0-2ppb min ( $H_2O$ )/  
0-20ppm – 0-1ppb min ( $O_2$ )

#### BENCHMARK COMPLIANCE

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

#### EASY TO USE

- Dual analysis capability provides 'one-box' solution for  $H_2O$  /  $O_2$  trace contaminant measurements
- A single analyzer can be used for multiple background gases:  
 $N_2$ ,  $H_2$ , He, Ar and  $O_2$

#### KEY APPLICATIONS

- Bulk gas quality control checks for integrated circuit board fabs
- Leak detection checks

For more information please contact us  
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### FLEXIBLE TDL TRACE AND ULTRA-TRACE MEASUREMENTS

When you work in the manufacture of integrated circuit boards, the quality control of electronics grade UHP gas is crucial. To measure oxygen and moisture as a trace contaminant, you'll want a highly sensitive measurement that measures down to the lowest levels. Measurement reliability with a fast speed of response and uncompromised stability are a must. Regardless of your measurement requirements, you'll want a solution that delivers operational efficiencies. We don't believe you should have to compromise.

### A NO COMPROMISE SOLUTION

The DF-760E is the only combination analysis solution for ultra-trace levels of moisture and oxygen, delivered through Servomex's leading-edge TDL and Coulometric E-Sensor technology. A low LDL -100ppt (H<sub>2</sub>O) / 45ppt (O<sub>2</sub>) - delivers the sensitivity demanded, and the ability to measure multiple gas streams in N<sub>2</sub>, H<sub>2</sub>, CO<sub>2</sub>\*, He, Ar and O<sub>2</sub> background gases with a single device provides considerable adaptability to suit your gas quality checking needs.

### SIMPLE MAINTENANCE AND REDUCED ONGOING COSTS

By offering dual analysis capability in a single, compact one-box solution, the DF-760E reduces the footprint, infrastructure and maintenance costs associated with using separate analyzers for oxygen and moisture respectively. By offering consistent reliability and negligible zero drift, the DF-760E helps extend maintenance and calibration intervals, while factory pre-calibration simplifies set up and installation. This ensures the DF-760E delivers an integrated, value-added solution for the semiconductor industry.

\* LDL of moisture in CO<sub>2</sub> is 250ppt

### USEFUL LINKS



*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.*

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# TECHNICAL DATA SHEET

## SERVOPRO DF-760E NanoTrace



### SPECIFICATIONS

<b>GASES MEASURED</b>	H <sub>2</sub> O (purity) & O <sub>2</sub>	
<b>TECHNOLOGY</b>	Tunable laser diode (TDL) and coulometric	
<b>PERFORMANCE</b>		
<b>Gas</b>	H <sub>2</sub> O	O <sub>2</sub>
<b>Background gases</b>	N <sub>2</sub> , H <sub>2</sub> , He, Ar and O <sub>2</sub>	
<b>Technology</b>	Tunable laser diode (TDL)	Coulometric
<b>Measurement range</b>	0-20ppm - 0-2ppb minimum	0-20ppm - 0-1ppb minimum
<b>Lower detection limit</b>	100ppt	45ppt
<b>Intrinsic error (accuracy) FS</b>	±3% of reading / ±0.2ppb (whichever is greater)	±3% of reading / ±0.1ppb (whichever is greater)
<b>Response time (T<sub>90</sub>)</b>	<3 minutes at 1 l/min	<15 seconds at 1 l/min
<b>Zero drift/month</b>	Negligible	
<b>Smallest recommended output range</b>	0-2ppb minimum	0-1ppb minimum
<b>Upset recovery time</b>	<5 minutes to return to within 10ppb of previous stable reading	
<b>SIGNAL OUTPUTS/INPUTS</b>		
<b>Analog output</b>	5 output options available for both O <sub>2</sub> and H <sub>2</sub> O Isolated 4-20mA dc and a choice of 0-1, 0-2, 0-5 or 0-10V dc (analog output freeze control during calibration)	
<b>Analog output range</b>	Output parameters H <sub>2</sub> O scalable to any range between 0-2ppb to 0-20ppm O <sub>2</sub> scalable to any range between 0-1ppb to 0-20ppm	
<b>Audible/visual alarms</b>	Various alarms available 4 moisture levels / 4 O <sub>2</sub> levels, temperature, electrolyte condition, moisture sensor diagnostics loss of flow, zero verification or calibration in process, analyzer offline and analog output freeze during calibration	
<b>Dual scale range</b>	2 user selectable secondary analog output ranges for rescaling the output once the primary range is exceeded	
<b>Relay contacts</b>	4 non-latching, independently assignable to oxygen or oxygen calibration-in-process indicator and 4 non-latching, independently assignable to moisture alarms. SPDT contacts rated for 5A at 30V dc	
<b>Serial communications</b>	Factory configured RS232 or RS485 two-way serial communications	
<b>SAMPLE CONDITIONS</b>		
<b>Sample flow</b>	2 to 5 l/min (for nitrogen only) - contact Servomex for other background gases	
<b>Bypass flow</b>	0.25 to 2.5 l/min	
<b>Pressure</b>	30 - 150psig (2.06 - 10.3 BarG)	
<b>Dew point</b>	+5°C (+9°F) below minimum ambient	
<b>Temperature</b>	+10°C to +80°C (+50°F to +176°F). Recommended heated sample line to 60°C	
<b>Particulates</b>	Filtered to 2µm	
<b>Condition</b>	Sample must be oil free, non-corrosive, non-condensing (must be free of acidic components - contact Servomex for sample preconditioning options).	
<b>Vent</b>	Vent to atmosphere	

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

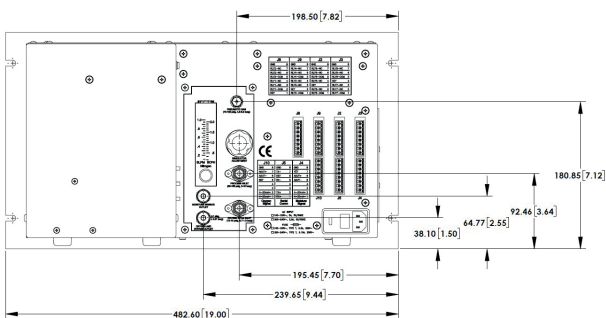
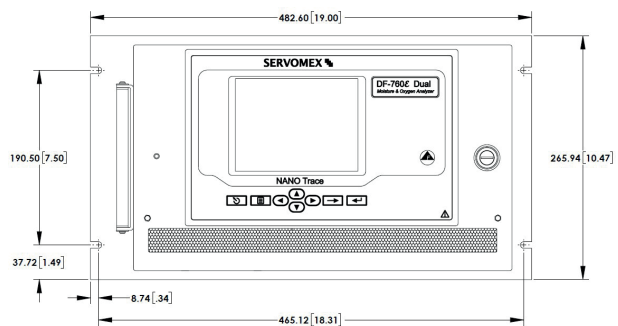
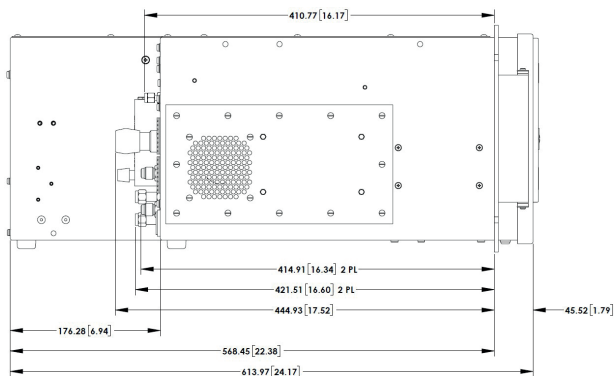


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OPERATING ENVIRONMENT	
Temperature	Operating: +10°C to +40°C (+50°F to +105°F) Storage: Less than +50°C, shielded from direct sunlight
Warm up time	5 minutes
Relative humidity	0 to 95% RH non-condensing
Operating altitude range	0-2,000m above sea level
PHYSICAL	
Size	483mm (19") Wide x 266mm (10.5") High x 608mm (23.9") Deep
Weight	31.8kg (70lbs)
Aspirator vacuum source	Aspirator with 1/4" compression inlet and outlet fittings
Mounting	19" rack mount NEMA 1 enclosure
Sensor storage conditions	We recommend that the analyzer be operated as intended, within 6 months of delivery
UTILITIES	
Supply voltage	110V ac at 5A or 230V ac 50/60 Hz @ 2.5A
Aspirator gas supply	Nitrogen or air at 80psig (+/- 3psig), 15 l/min with a backpressure on outlet stream of <2psig
Gas delivery system	Pneumatically actuated springless diaphragm valves, orbital butt welded assembly with zero dead volume for sensor isolation and zero verification high capacity moisture dryer provides moisture-free zero gas heated and temperature controlled sample delivery system integral pressure regulator with minimal wetted area. Includes on-board span cal system

## DIMENSIONAL DRAWINGS



Dimensions shown in millimetres [inches]



## 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 directives. This is a class 1 laser product.
ELECTRICAL SAFETY	Electrical safety to IEC 61010-1

## SAMPLE WETTED MATERIALS

ANALYZER FITTED WITH	Stainless steel G10 Epoxy Polypropylene PCTFE
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## OPTIONS

DESCRIPTION	
Pump vacuum source	Pump with 1/4" compression inlet and outlet fittings
Hydrogen safety system purge	Optional safety system for use with hydrogen includes sample delivery interlock and case purge valves for instrument housing, NEMA 4 enclosure and Z purge protection system for optional external vacuum pump. Hydrogen safety system can be ordered with or without the NEMA 4 enclosure and Z purge protection system for the optional vacuum pump (NOTE: hydrogen safety system limits available relays from 4 to 3)
CONFIGURATION OPTIONS	
Power input	110 VAC input power <input type="checkbox"/> 220 VAC input power <input type="checkbox"/>
Hydrogen safety system	Not required <input type="checkbox"/> System with pump purge <input type="checkbox"/> System without pump purge <input type="checkbox"/>
Vacuum source	Aspirator (standard) <input type="checkbox"/> Pump <input type="checkbox"/>
Key lock	Not required <input type="checkbox"/> Required <input type="checkbox"/>
Communication	Not required <input type="checkbox"/> RS232 communication <input type="checkbox"/> RS485 communication <input type="checkbox"/>
Special analog output	Analyzer supplied with isolated 4-20mA and a choice of 0-1 VDC <input type="checkbox"/> 0-2 VDC <input type="checkbox"/> 0-5 VDC <input type="checkbox"/> 0-10 VDC <input type="checkbox"/>
Power cord	Not required <input type="checkbox"/> USA <input type="checkbox"/> Europe <input type="checkbox"/> UK <input type="checkbox"/>
Electrolyte type	Gold <input type="checkbox"/>
Electrolyte shipment method	None required, has own stock <input type="checkbox"/> From factory (add line item) <input type="checkbox"/> Other SMX plnt (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

PBTDSDF760 Rev. 2 Date: 01/22

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