

PRODUCT OVERVIEW

SERVOPRO DF-750 NanoTrace

HIGH PURITY



TUNABLE DIODE LASER ABSORPTION SPECTROSCOPY (TDLAS) TRACE/ULTRA-TRACE MOISTURE MEASUREMENTS FOR CONTINUOUS QUALITY CONTROL IN SEMICONDUCTOR FABS

GAS	MEASURES	APPLICATION
MOISTURE	TRACE PPB ULTRA TRACE PPT	QUALITY

SENSING TECHNOLOGY



KEY APPLICATIONS

- Bulk gas quality control checks for UHP electronic gases used in semiconductor fabs
- Leak detection checks for UHP electronic gases used in semiconductor fabs

UNRIVALLED PERFORMANCE

- Uses industry-leading, high stability TDLAS trace sensing with zero drift
- New Solid State Hard Drive and CPU
- 100ppt Lower Detection Limit (LDL)
- Manufactured by Servomex - 70 years' experience pioneering gas analysis with thousands of units used in the field

EASY TO USE

- Improved uptime with TDLAS first principle physics methodology
- Laser lock system guarantees location of the moisture spectra peak
- High reliability - repeatable baseline measurements are not affected by a loss in mirror reflectivity

FLEXIBLE

- Broad detection range: 0-20ppm
- Storage and recall function: calibration, system error and measurement data facilitates archiving operational history
- Operable via front panel or digital communication options
- Analysis resistant to gas cell contamination: DF-750 operates to specification with up to 90% signal loss

LOW COST OF OWNERSHIP

- Herriott Cell sensor design, the same as used in NASA's Mars rovers
- Absence of zero drift reduces calibration requirements
- Modular design allows individual component replacement in the field
- No consumables required

BENCHMARK COMPLIANCE

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

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HIGH STABILITY TDLAS TRACE/ULTRA-TRACE MEASUREMENTS

Ultra-trace qualification of UHP electronic gases is essential for semiconductor fabrication. You need a moisture analyzer that can deliver highly accurate measurements sensitive to perturbations, but limits false positive disrupting production. The lowest LDL is a must, as is the need to easily identify trends and recall graphs in real time. You need a moisture analyzer that can deliver highly accurate measurements and is sensitive to perturbations, but limits production-disrupting false positives.

A NO COMPROMISE SOLUTION

The DF-750 is designed to meet the exceptional gas purity standards demanded by semiconductor manufacturers worldwide. Utilizing leading-edge TDLAS sensing technology, housed in a robust and resilient Herriott Cell, the DF-750 avoids moisture contact with optical sensing components. The result is an analyzer that delivers an ultra-sensitive, industry-leading 100ppt Lower Detection Limit, ideal for checking for minute levels of moisture in a wide range of UHP electronics-grade gases, including N₂, H₂, CO₂*, He, Ar and O₂. With data recorded and readily available through flexible storage and recall functions, the DF-750 is the complete solution for UHP gas monitoring in 300mm semiconductor fabs.

FIELD REPAIRABLE AND REDUCED ONGOING COSTS

The new DF-700 Series Gen VII was designed for manufacturability and repairability. The laser cell, hard drive, CPU, PCBs, display, filter and gas panel can now all be replaced in the field. We have SOPs and service videos to guide these repairs. So, in the rare case a unit exhibits a component failure the product can stay in your facility to be repaired by a competent technician of yours or ours.

The use of patented leading-edge TDLAS technology provides long-term stability and accuracy, while the use of this first principle physics method also helps to reduce ongoing maintenance thanks to its non-depleting technology.

* LDL of moisture in CO₂ is 250ppt

USEFUL LINKS



PBTDSD750 Rev. 2 Date: 06/22

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-750 NanoTrace



SPECIFICATIONS

GAS MEASURED	H ₂ O (purity) in N ₂ , O ₂ , H ₂ , He, Ar and CO ₂
TECHNOLOGY	Tunable Diode Laser Absorption Spectroscopy (TDLAS)
PERFORMANCE	
Measurement range	0-20ppm
Lower detection limit	100ppt (250ppt in CO ₂)
Intrinsic error (accuracy) FS	±3% of reading / ±0.2ppb (whichever is greater)
Response time (T ₉₀)	<3 minutes at 1l/min
Zero drift/month	Negligible
Span drift/month	Negligible
Upset recovery time	<5 minutes to return to within 10ppb of previous stable reading
SIGNAL OUTPUTS/INPUTS	
Analog output	Isolated 4-20mA dc and a choice of 0-1, 0-5 or 0-10V dc
Analog output range	Scalable to any range between 0-2ppb to 0-20ppm
Visual alarms	4 moisture levels, temperature, system error, pressure range and hydrogen safety system (if applicable)
Dual scale range	2 user selectable analog output ranges
Relay contacts	4 non-latching, independently assignable relays. SPDT contacts rated for 1A at 30V dc
Serial communications	Factory configured RS232 or RS485 two-way serial communications
SAMPLE CONDITIONS	
Sample flow range	0.5 to 2 l/min (most common flowrate 1l/min)
Bypass flowrate	0.3 l/min (depending on configuration)
Pressure (gauge)	30 to 150psi, 2.07 to 10.34 Bar, 207 to 1,034 KPa
Dew point	+5°C (+9°F) below minimum ambient
Temperature	+10°C to +80°C (+50°F to +176°F)
Particulates	Filtered to 2µm
Sample gas	Must be oil free, non-corrosive, non-condensing
Vent (gauge)	Vent to atmosphere. Maximum vent pressure is -2 to 2psi, -0.14 to 0.14 Bar, -13.7 to 13.7 KPa
OPERATING ENVIRONMENT	
Operating temperature	+10°C to +40°C (+50°F to +105°F)
Storage temperature	Less than +50°C (+122°F), shielded from direct sunlight
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 631mm (24.9") Deep (see drawing below)
Weight	33.2kg (73lbs)
Standard aspirator connection	1/4" compression inlet and outlet fittings
Mounting	19" rack mount NEMA 1 enclosure, IP10
UTILITIES	
Supply voltage	110V ac @ 5A or 230V ac 50/60 Hz @ 2.5A
Zero gas	Optional - recommended if operating near LDL
Span gas	Not required
Standard aspirator gas supply (gauge)	N ₂ or CDA at 80psig (±3psig) 15l/min with a backpressure on outlet stream of <2psig
Pneumatic gas (gauge)	N ₂ or CDA 60 to 100psi, 4.14 to 6.89 Bar, 413.7 to 689.5 KPa

COMPLIANCE

EC DIRECTIVES	This product complies with the EU EMC Directive, EU Low Voltage Directive, Pollution Degree 2. This is a class 1 laser product.
ELECTRICAL SAFETY	Electrical safety to IEC 61010-1

OPTIONS

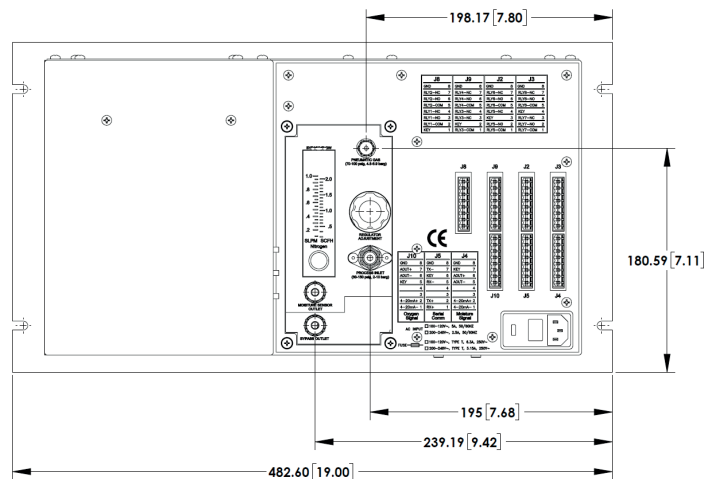
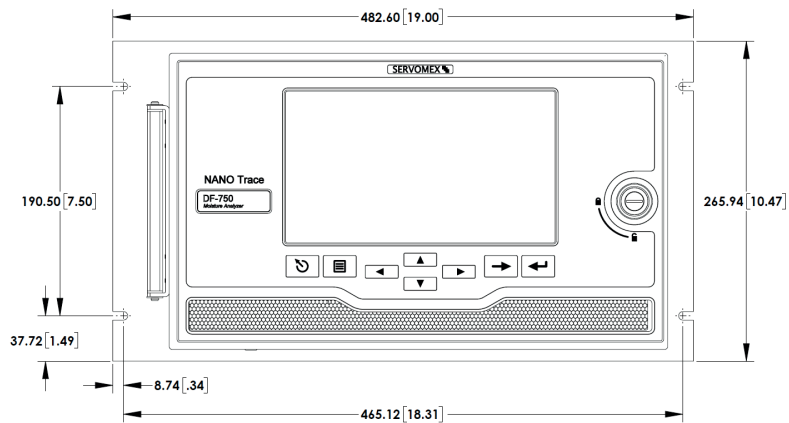
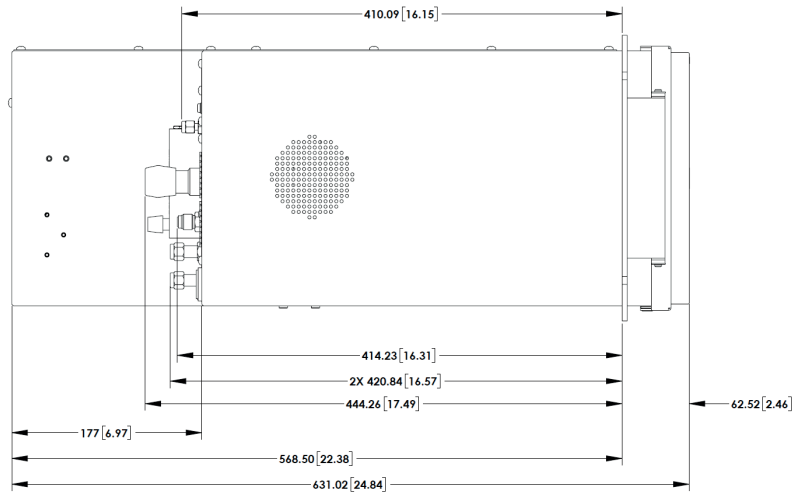
CONFIGURATION OPTIONS	
Power input	110 VAC input power <input type="checkbox"/>
	220 VAC input power <input type="checkbox"/>
Hydrogen safety system	Not required <input type="checkbox"/>
	System with pump purge <input type="checkbox"/>
	System without pump purge <input type="checkbox"/>
Vacuum source	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 <input type="checkbox"/>
	0-1 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"/>

Please tick the box for required options



DIMENSIONAL DRAWINGS

Dimensions shown in millimetres [inches]



> WE'RE READY TO HELP

WHATEVER YOUR GAS ANALYSIS REQUIREMENTS, WHEREVER YOU ARE

PBTDSDF750 Rev. 2 Date: 06/22

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