

# DF SERIES

## DF-750 NanoTrace

TUNABLE LASER DIODE (TDL) TRACE/ULTRA-TRACE MOISTURE MEASUREMENTS FOR QUALITY CONTROL IN SEMICONDUCTOR FABS



### DF-750 NanoTrace

Designed specifically to make trace and ultra-trace measurements in a range of ultra high purity gases, the DF-750 is the leading choice in moisture analysis for the semiconductor industry. Optimized for use in 300m semiconductor fabs, the DF-750 measures moisture as a contaminant in electronics grade nitrogen, hydrogen, helium, argon and oxygen.

With Servomex's industry-leading TDL sensing technology delivering an industry-leading 100ppt Lower Detection Limit, the DF-750 delivers a stable, highly accurate measurement that meets the precise monitoring needs of semiconductor production.

This analyzer also offers attractive affordability over product life. The DF-750's robust sensor construction has low lifetime maintenance requirements and delivers zero-drift stability that greatly extends calibration intervals. This low cost-of-ownership combined with exceptional measurement performance, the DF-750 is the first-choice analytical solution for UHP gas quality checks.

### FLEXIBLE

- Trace level Tunable Diode Laser (TDL) sensing provides high stability and minimal moisture contact with optical elements
- 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

### EASY TO USE

- Simplified ongoing maintenance requirements through the use of non-depleting, low drift potential TDL sensing technology
- High reliability; repeatable baseline measurements are not affected by a loss in mirror reflectivity

### LOW COST OF OWNERSHIP

- Robust sensor construction reduces maintenance requirements
- Zero drift extends calibration intervals

### UNRIVALLED PERFORMANCE

- Uses industry-leading, non-depleting, high stability TDL trace sensing with zero drift
- Industry leading 100ppt Lower Detection Limit
- Manufactured by Servomex - over 60 years' experience pioneering gas analysis with thousands of units used in the field

### BENCHMARK COMPLIANCE

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

Learn more about the DF-750 NanoTrace  
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# PRODUCT OVERVIEW: DF-750 NanoTrace

## HIGH STABILITY TDL TRACE/ ULTRA-TRACE MEASUREMENTS

Ultra-trace qualification of UHP electronic gases is essential for semiconductor fabrication. You need a moisture analyzer that can deliver high stability measurements with sensitive and consistent performance. An accurate and low LDL is a must, as is the need to easily store and recall data/calibration records. No matter what your requirements, you'll want a moisture analyzer that can provide operational efficiencies. We don't believe you should have to compromise.

## A NO COMPROMISE SOLUTION

The DF-750 is designed to meet the exceptional gas purity standards demanded by semiconductor manufacturers worldwide. Utilizing leading-edge TDL sensing technology, housed in a robust and resilient Herriot Cell, the DF-750 avoids moisture contact with optical sensing components. The result is an analyzer that delivers an ultra-sensitive, industry-leading 100pt Lower Detection Limit, ideal for checking for minute levels of moisture in a wide range of UHP electronics grade gases, including N<sub>2</sub>, H<sub>2</sub>, He, Ar and O<sub>2</sub>. With data recorded and readily available through flexible storage and recall functions, the DF-750 is the complete solution for UHP gas monitoring in 300m semiconductor fabs.

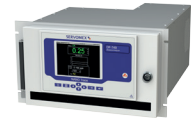
## SIMPLE MAINTENANCE AND REDUCED ONGOING COSTS

The use of patented leading-edge TDL technology provides zero drift accuracy, reducing ongoing calibration requirements, while the use of this sensing principle also helps to reduce ongoing maintenance thanks to its non-depleting nature.

## ALTERNATIVE PRODUCTS

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

### DF-749 NanoTrace



With a low 250ppt LDL, the DF-749 delivers highly accurate trace and ultra-trace moisture contaminant measurements in nitrogen, hydrogen, helium, argon and oxygen.

### DF-745 NanoTrace



Designed for trace and ultra-trace measurements where moisture is a contaminant, the DF-745 is ideal for bulk gas checks and leak detection in LED manufacturing. This analyzer uses TDL technology and is suitable for use with multiple background gases.

### DF-760E NanoTrace



The DF-760E combines TDL and Coulometric sensing to create a unique integrated ultra-trace measurement for moisture and oxygen - ideal for PCB bulk gas quality checks and leak detection.

## KEY APPLICATIONS

- Bulk gas quality control checks for UHP electronic gases used in 300m semiconductor fabs
- Leak detection checks for UHP electronic gases used in 300m semiconductor fabs



# PRODUCT DATA: DF-750 NanoTrace

OPTIONS	DESCRIPTION	SPECIFICATION
Output	5 output options available	Isolated 4-20mA DC and a choice of 0-1,0-2,0-5 and 0-10V DC
Output range	Output parameters	Scalable to any range between 0-2ppb to 0-20ppm (LDL 100ppt)
Alarms	5 alarms available	4 moisture levels, temperature, moisture sensor diagnostics, analyzer offline and expanded range
Serial communications	2 options for two-way serial communications	Factory configured RS232 or RS485
Vacuum pump	Aspirator source for high capacity sample draw	Pump with 1/4" compression inlet and outlet fittings
Dual scale range	2 range options	User-selectable secondary analog output ranges for rescaling the output once the primary range is exceeded
Hydrogen purge	Enhances safety during gas purge procedures	Includes sample delivery interlock and case purge valves for instrument housing and enclosure, and purge protection system for optional external vacuum pump. Please note: limits available relays from 4 to 3
Mounting	1 option	19" rack mount NEMA 1 enclosure

## ACCESSORIES

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

## MONITORING PERFORMANCE

Gas	H <sub>2</sub> O (purity)
Technology	Tunable Laser Diode (TDL)
Range	0-20ppm – 0-2ppb min.
Accuracy (intrinsic error) FS	±3% of reading / ±0.2ppb (whichever is greater)
Zero drift/month	Negligible
T <sub>90</sub> in minutes	<3 at 1liter/min

## SAMPLE FOR MEASUREMENTS

Sample for measurement	Sample must be oil free, non-corrosive and non-condensing (must be free of acidic components – contact Servomex for sample preconditioning options)
Sample pressure	30 – 150psig (3.08 – 11.3 BarA)
Dew Point	5°C/9°F below minimum ambient
Particulates	Filtered to 2µm



# PRODUCT DATA: DF-750 NanoTrace

## DEVICE SPECIFICATION

### Size:

- 483mm (19") Wide x 266mm (10.5") High x 608mm (23.9") Deep

### Weight:

- <31.8kg (70lbs)

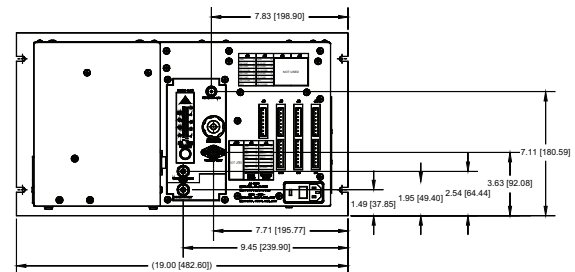
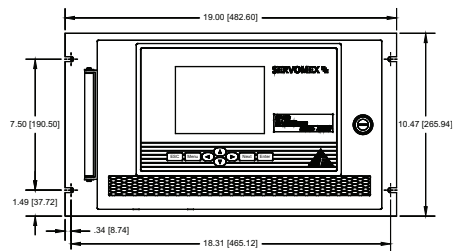
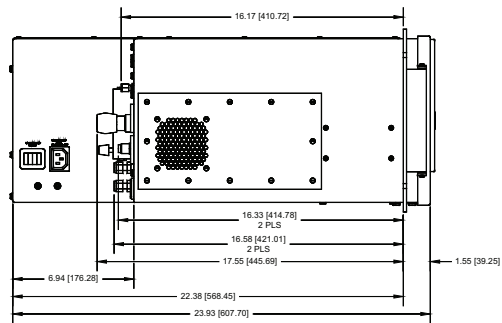
### Operating Temperature:

- 10°C - 40°C/50°F - 104°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:** This document was updated in August 2014. 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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