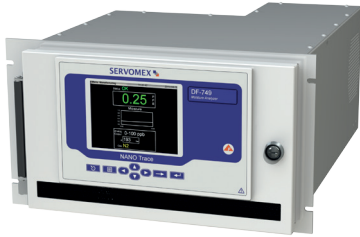


# DF SERIES

## DF-749 NanoTrace

### TUNABLE DIODE LASER (TDL) SENSOR TRACE/ULTRA-TRACE MOISTURE MEASUREMENTS FOR CHECKS OF ULTRA HIGH PURITY ELECTRONIC GASES



#### DF-749 NanoTrace

The DF-749 provides trace and ultra-trace moisture contaminant measurements in various background gases including nitrogen, hydrogen, helium, argon and oxygen. Ideal for quality checking of UHP gases used in LCD and LED manufacture, the DF-749's compact form makes it easily portable for easy cart or mobile use. A robust hardware/software design virtually eliminates dry down times often associated with UHP gas checking.

Offering an ultra-sensitive Lower Detection Limit (LDL) of 250ppt, this device uses industry-leading Tunable Diode Laser (TDL) sensing technology, delivering ultra-reliable baseline measurements and a fast speed of response. This analyzer is also highly affordable over product life, with a robust sensor construction that has low lifetime maintenance requirements and a zero-drift measurement stability that greatly extends calibration intervals. Factory pre-calibration also provides simplified set up.

#### FLEXIBLE

- Trace level Tunable Diode Laser (TDL) sensing provides high stability measurements through minimal moisture contact with optical elements
- Broad detection range: 0-20ppm
- Flexible configuration options: initiation via front panel/digital interconnect

#### EASY TO USE

- Highly reliable with repeatable baseline measurements unaffected by loss of mirror reflectivity
- Compact with a low weight; moves easily from port to port and ideal for other mobile applications

#### LOW COST OF OWNERSHIP

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

#### UNRIVALLED PERFORMANCE

- Analysis immune from gas cell concentration: DF-749 operates to specification with up to 90% signal loss
- 250ppt Lower Detection Limit (LDL)
- Manufactured by Servomex - over 60 years' experience 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-749 NanoTrace  
VISIT [SERVOMEX.COM](http://SERVOMEX.COM)



[SERVOMEX.COM](http://SERVOMEX.COM)

# PRODUCT OVERVIEW: DF-749 NanoTrace

## HIGH STABILITY TDL TRACE/ULTRA-TRACE MEASUREMENTS

Modern LCD and LED manufacturing processes require an ultra-trace quality measurement for moisture contaminants in high purity electronics grade gases. In such a specific application, users need analysis capable of delivering high-accuracy and ultra-low detection limits in multiple background gases. No matter what your application requirements, you need a moisture analyzer that can also provide operational cost efficiencies. We don't believe you should have to compromise.

## A NO COMPROMISE SOLUTION

The DF-749 NanoTrace is ideal for your applications, combining high stability trace and ultra-trace measurements with flexible portability. Using state-of-the-art TDL sensing - with zero drift and a fast speed of response - this device provides high stability accuracy that is ideal for upset prone applications. With a low LDL of 250ppt and the ability to monitor multiple background gases in N<sub>2</sub>, H<sub>2</sub>, He, Ar and O<sub>2</sub> gas streams with a single unit, the DF-749 NanoTrace delivers a high accuracy, adaptable monitoring solution: one enhanced by a compact design simplifying port-to-port mobility, making it ideal for either a fixed or cart-based solution.

## SIMPLE MAINTENANCE AND REDUCED ONGOING COSTS

Proven sensing technology and advanced functionality delivers DF-745 users a low lifetime cost-of-ownership. Factory pre-calibration helps facilitate quick and easy installation; data archiving makes the storage and recall of calibration, system error and measurement data simple.

The use of the high stability, TDL sensor - with zero drift potential - extends calibration intervals and minimizes ongoing maintenance needs, enabling considerable savings over a long product lifetime.

## ALTERNATIVE PRODUCTS

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

### DF-740 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-750 NanoTrace



When you need to measure moisture as a contaminant in UHP quality gases, the DF-750's trace and ultra-trace measurements are ideal in quality and leak detection applications. Optimized for bulk gas control in 300m semiconductor fabs.

### 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 LED and LCD plant applications
- Leak detection checks for UHP electronic gases used in LED and LCD plant applications



# PRODUCT DATA: DF-749 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 250ppt)
Alarms	Various alarms provided	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	For high capacity sample draw	¼" 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
Isolation package	Isolates cell during transport	Upstream/downstream internally air actuated electro-polished isolation valves and bypass rotameter and inlet pressure regulator (rated up to 150psig), and a back flow prevention valve. Please note: requires 60-100psig connection to 1/8" compression inlet fitting for valve actuation
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 – 0-2100ppb min.
Accuracy (intrinsic error) FS	±3% of reading / ±0.4ppb (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	5-30psig (1.36 – 3.08 BarA)
Dew Point	5°C/9°F below minimum ambient
Particulates	Filtered to 2µm

TUNABLE  
DIODE LASER



FLAME IONISATION  
DETECTOR



GAS  
CHROMATOGRAPHY



PLASMA



LASER MOISTURE



COULOMETRIC



SPECTROSCOPIC



# PRODUCT DATA: DF-749 NanoTrace

## DEVICE SPECIFICATION

### Size:

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

### Weight:

- 31.8kg (70lbs)

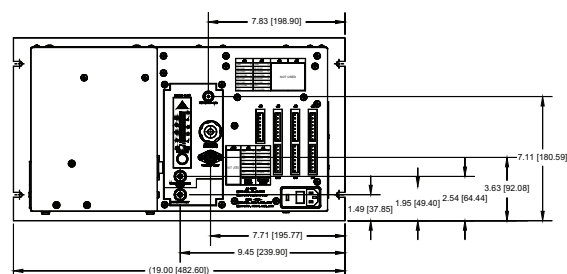
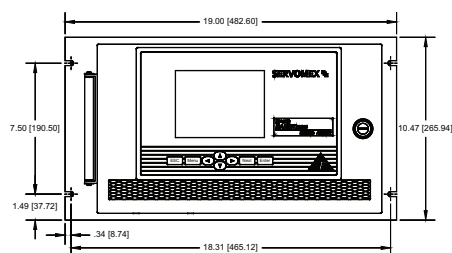
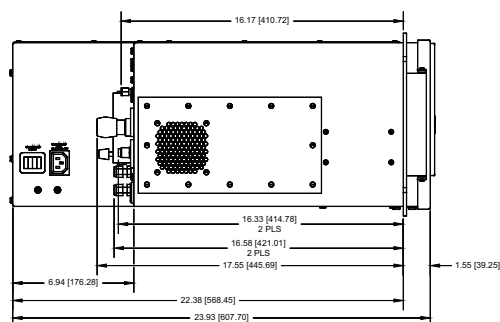
### Operating Temperature:

- 10°C - 80°C/50°F - 176°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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