SERVOPRO

NanoTrace DF-749

Product overview

High Purity

Gas	Measures	Application
Moisture	Trace ppb Ultra trace ppt	Quality

SENSING TECHNOLOGY

Laser Moisture

GEN-7

NanoTrace SERIES

Key applications

- ASU bulk gas production quality control prior to final purification to UHP specifications
- Leak detection checks for UHP electronic gases used in semiconductor fabs

Tunable diode laser absorption spectroscopy (TDLAS) sensor trace/ultra-trace moisture measurements for checks of ultra high purity electronic gases

Unrivalled performance

- Uses industry-leading, high stability TDLAS sensing technology
- New Solid State Hard Drive and CPU
- 250ppt Lower Detection Limit (LDL)
- Manufactured by Servomex - 70 years' experience with thousands of units used in the field

Flexible

- Broad detection range: 0ppb - 20ppm
- Storage and recall function: calibration, system error and measurement data facilitates archiving operational history
- Analysis resistant to gas cell contamination: DF-749 operates to specification with up to 90% signal loss

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

Low cost of ownership

- Robust sensor construction reduces maintenance requirements
- Absence of zero drift extends calibration intervals
- 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

For more information visit **servomex.com/contact**

SERVOPRO

NanoTrace DF-749

Product overview

High Purity

High stability TDLAS trace/ultra-trace measurements

Current semiconductor manufacturing processes require an ultra-trace quality measurement for moisture contaminants in high purity electronics grade gases. In such a demanding application, users need analysis capable of delivering high-accuracy and ultra-low detection limits in multiple background gases. No matter how specific the application requirement, you'll want a device that reduces preventative maintenance costs, maximizes uptime and has a long-life in the market place. 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. Using state-of-the-art TDLAS sensing technology - with zero drift and a fast speed of response - this device provides high stability and accuracy that is ideal for upset prone applications. With a low LDL of 250ppt and the ability to monitor moisture in multiple background gases (N_2, H_2, He, Ar, CO_2 and O_2 gas streams) with a single unit, the DF-749 NanoTrace delivers a high accuracy, adaptable monitoring solution; ideal for either a fixed or cart-based solution.

Field repairable and reduced ongoing costs

The new DF-700 Series Gen-7 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 nature.

Useful links:

SERVOMEX SERVICE NETWORK

servomex.com/**service**

SERVOMEX SYSTEMS

servomex.com/**systems**

SERVOMEX EXPERT

servomex.com/**expert-guidance**

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.

Please note: Whilst every effort has been made to ensure accuracy, no responsibility can be accepted for errors and 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.

Servomex has a policy of constant product improvement and reserves the right to change specifications without notice. © Servomex Group Limited. 2024. A Spectris company. All rights reserved.

PBTDSDF749 Rev. 2 Date: 10/24

Technical data sheet

SERVOPRO NanoTrace DF-749

Specifications

Gas measured	**H_2O (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	250ppt
Intrinsic error (accuracy) FS	±3% of reading / ±0.4ppb (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	5 output options available Isolated 4-20mA dc and a choice of 0-1, 0-5 or 0-10V dc
Analog output range	Output parameters 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	Operating: +10°C to +40°C (+50°F to +105°F)
Storage temperature	Less than +50°C (+122°F), 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 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 (Isolation panel option)

Compliance

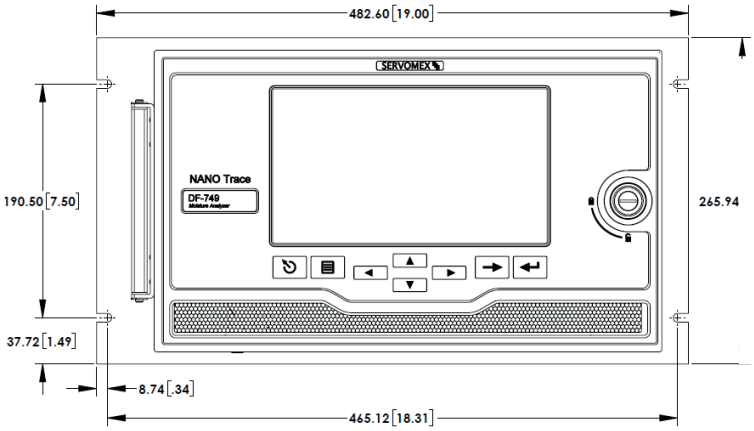
EC directives	This product complies with the EU EMC Directive, EU Low Voltage Directive, Pollution Degree 2. This is a class 1 laser product.
Electrical safety	Electrical safety to IEC 61010-1

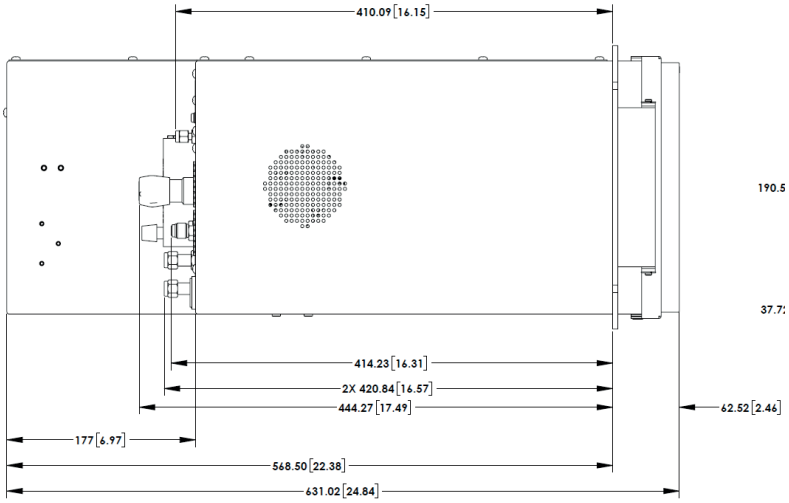
Options

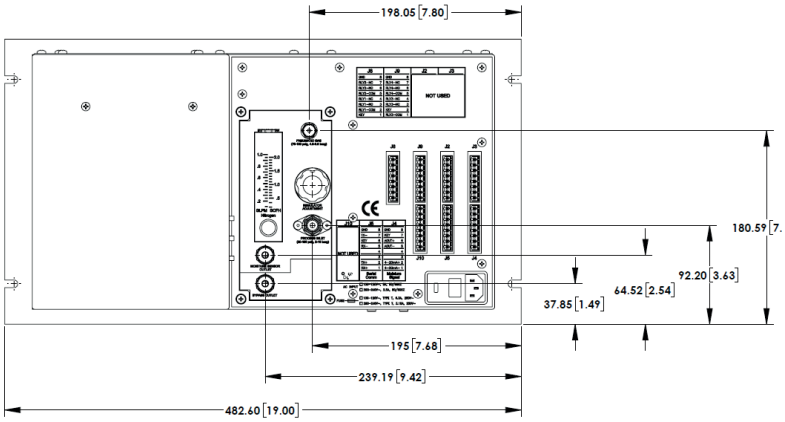
Configuration options		
Power input	110 VAC input power 220 VAC input power	☐ ☐
Hydrogen safety system	Not required System with pump purge System without pump purge	☐ ☐ ☐
Vacuum source	Aspirator (standard) Pump	☐ ☐
Gas panel	Standard gas panel Isolation gas panel	☐ ☐
Key lock	Not required Required	☐ ☐
Communication	Not required RS232 communication RS485 communication	☐ ☐ ☐
Special analog output	Analyzer supplied with isolated 4-20mA and a choice of 0-1 VDC 0-5 VDC 0-10 VDC	 ☐ ☐ ☐
Power cord	Not required USA Europe UK	☐ ☐ ☐ ☐

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.

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.

Please note: Whilst every effort has been made to ensure accuracy, no responsibility can be accepted for errors and 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.

Servomex has a policy of constant product improvement and reserves the right to change specifications without notice.

© Servomex Group Limited. 2024. A Spectris company.
All rights reserved.

PBTDSDF749 Rev. 2 Date: 10/24

Analysis that **empowers**

SERVOMEX
a **spectris** company