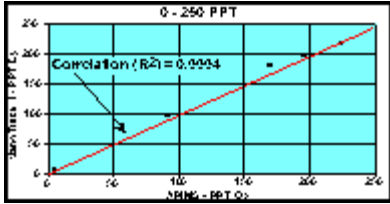


NanoTrace II

DF-560 UltraTrace Oxygen Analyzer

NanoTrace II provides the lowest LDL in the industry. Part of the extensive APIMS testing by several third parties, including SAES Pure Gas Inc., is shown. NanoTrace II is an extension of the first NanoTrace used in semiconductor fabs and analytical carts around the world. It features a lower LDL, Data Graphing, Scheduled Automatic Calibrations, Automated



maintenance Logging, and a variety of other new capabilities. Every NanoTrace is manufactured under ISO 9001 control and is calibrated and operated for five weeks to ensure a fast and accurate start-up at your site.

The Ultimate Analyzer Performance

- Very Stable 75 ppt Low-Detection-Level in an industrial, low maintenance analyzer

Automated Maintenance

- Executes automatic zero and span calibrations on a scheduled basis, or executes scheduled automatic “checks” and issues a notice when calibration is needed.
- Automatic Maintenance Log records water additions, sensor data, and calibration activity to ensure good analytical practice and ISO reord-keeping requirements.

Automated Data Logging

- Builds 4 day and 30 day graphical records of analyzer readings.
- A “Zoom” feature provides a close look at data anywhere in the long term record.
- Select “Fill and Stop” or “Continuous” data collection modes.

For more information about the DF-560 NanoTrace analyzer, ask for the Delta F UltraTrace Compendium.

DF-560 Performance

Lowest Detection Level (LDL)	75 ppt
Analyzer Resolution	50 ppt
Response Time	< 20 seconds
Accuracy (Constant Conditions)	0.1 ppb or $\pm 3\%$ of Reading
Upset Recovery	<15 min from high ppm upset
Output Range (Lowest)	0 to 2 ppb

Specifications

Sample Pressure	15 to 25 psig
Sample Flow	1 to 3 scfh
Gas Compatibility	All inerts and passive gases including N ₂ , He, H ₂ , Ar, light hydrocarbons, halocarbons, etc.

Options

Automatic Calibration System
 Manual Calibration System
 4 – 20 mADC Output Isolation
 RS-232 and RS-485
 Upt o 4 Assignable Alarm Relays
 N₂ Case Purge
 NiCAD Batteries
 Flow Alarm



Configuration and Installation

Delta F provides comprehensive assistance for a broad variety of application problems including measurements of semiconductor specialty gases. Depending on the model, Delta F analyzers can be configured to provide a wide choice of outputs for data collection and process control systems. Contact your Delta F representative for an Applications Data Sheet and pricing information.



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NanoTrace II Configuration Guide

DF-560

Optional Equipment

Base Model

560-0020 *NanoTrace II Oxygen Analyzer*

-S (added to model number) *Stab-El Sensor System*

Enables operation with trace levels of acid gas or any ionic contamination (within limits-consult factory for guidelines)

-V (added to model number)

230 VAC/50-60 Hz Input Power

Plumbing

560-PR1-5V ^{NOTE 1} *High Purity Pressure Regulator*

3000 psig inlet capacity; 0-15 psig adjustable outlet pressure; requires 5 psig minimum inlet pressure (1/4 inch VCR compatible fittings)

560-PR1-5V-MNT *Regulator Mounting*

Welded tube assembly and bracket for mounting 560-PR1-5V regulator to analyzer cabinet

560-FCV-UHP *High Purity Flow Control Valve*

Ultra high purity bellows valve for upstream isolation shut-off and flow control (1/4" VCR compatible fittings)

560-ISO-DSV *Downstream Isolation Valve*

560-SSOL ^{NOTE 2} *Stainless Steel Outlet Line*

Calibration

560-CAL-A *Automated Calibration System*

Provides menu driven automatic zero and span valve switching, pneumatic diaphragm valves and zero purifier in a small on-board package, only 12.5" depth behind location of optional panel (requires 70-100 psig pneumatic supply.)

560-CAL-EXT *Auto Control of User-Cal Components*

Software with switched 6 VDC power for control of external, span/zero solenoids and valves.

560-CAL-M *Manual Calibration System*

Provides manual quarter-turn springless diaphragm valves and zero purifier in an orbital butt welded assembly that is compactly integrated on the rear panel of the analyzer to optimize portability.

-HCP ^{NOTE 3} *High Capacity Purifier*
(Substitute for Standard Purifier)

Recommended for applications where source gas purity can be > 10 ppb or sample sources are frequently switched, such as all portable applications. Provides 30 times higher capacity than the standard purifier.

Alarms (Audible/Visual)

560-FLALM *Low Flow Alarm*

Cabinet

560-N2CP-FS ^{NOTE 2} *N₂ Case Purge w/ Power Interlock*
(not compatible with 560-PNL)

560-RMNT *Rack Mount* (19"Wx10.5"Hx10.1"D)

560-PNL *Panel Mount* (13.9"Wx9.9"Hx10.1"D)

560-KYLK *Key Lock*

Relay Contacts ^{NOTE 4} (Independently assignable)

560-RLY1 *One Relay Contact*

560-RLY2 *Two Relay Contacts*

560-RLY3 *Three Relay Contacts*

560-RLY4 *Four Relay Contacts*

Outputs

560-IAO *Isolated Voltage and Current Analog Output*

560-RS232 *Two-way Serial Communications*

560-RS485 *Two-way Serial Communications*

Miscellaneous

560-NiCAD *Supplemental Battery Input Power*
Permits portable operation independent of AC power

560-HCP *High Capacity Zero Purifier* (spare)

560-SP *Standard Capacity Zero Purifier* (spare)

560-XTC-RS232 *Serial Port Adapter Cable*

Analyzer RS232 Port to 9-pin D-sub connector (10 ft.)

560-B36 *NiCad Battery Pack* (spare)

DF-E07 *Electrolyte Solution* (One charge)

NOTES:

1. Requires 560-PR1-5V-MNT or external support by user. External support not required when an auto or manual calibration system is ordered.
2. Required when monitoring combustible samples such as H₂.
3. Add "-HCP" to either the 560-CAL-A or 560-CAL-M option.
4. Used with Optional or Standard Alarms or Status Indicators

NanoTrace II Configuration Guide

Rev. Date: December 1, 1998

DF-560

Standard Features & Specifications

Performance

Lowest Detection Level	75 ppt
Resolution	
Analytical (<i>Sensitivity-smallest detectable change</i>)	50 ppt
Display	10 ppt
Analog Output	1 ppt
Accuracy (greater of)	±3% of reading or ±0.1 ppb (Constant Conditions)
Response Time (typically) <i>Time to reach 90% of final reading</i>	<20 seconds
Upset Recovery Time <i>Time from high ppm upset to within 10 ppb of the previously stable reading</i>	<15 minutes
Range (Output Scale)	0-2 ppb (min) 0-20 ppm (max)
Ambient Operating Temperature	32° to 110° F (0° to 45° C)
Background Gas Compatibility <i>All inert and passive gases including N₂, He, H₂, Ar, light hydrocarbons, halocarbons, etc.</i> <i>Includes Scale Factor as standard which permits accurate read-out of oxygen in background gases with different diffusivities to nitrogen.</i>	

Gas Sample Conditions

Sample Pressure <i>Operating limits:</i>	15 to 25 psig (2.03 to 2.72 bar) Regulated by a critical orifice For over 25 psig – order option NT-PR1-5V
<i>Sensor overpressure damage limit:</i>	5 psig (1.36 bar)
Return Pressure <i>For H₂ and He</i> <i>For N₂, Ar, and all other background gases</i>	Atmospheric Vent (optimal) Maximum limit: ± 1psig Maximum limit: ± 2 psig
Flow Rate:	1.0 to 3.0 scfh (0.5 to 1.5 slpm)
Temperature (Gas Sample)	32° to 122° F (0° to 50° C)
Moisture	No limits (avoid condensation)

Gas Flow System

Construction Materials	300 Series stainless steel
Gas Connections	¼ inch VCR compatible inlet fitting Orbital butt welded sensor inlet assembly 1/8 inch compression outlet fitting
Calibration System Components	Pneumatically or manually actuated springless diaphragm valves, orbital butt welded assembly Oxygen scrubber provides <0.1 ppb oxygen-free zero gas ¼ inch VCR compatible span inlet fitting 1/8 inch compression fittings for pneumatic actuator gas

Maintenance & Logging

Data Logging & Graphing

Automated Scheduled Calibration

(Requires selecting either the 560-CAL-A or the 560-CAL-EXT option.)

Automated Scheduled Calibration Checks

(Requires selecting either the 560-CAL-A or the 560-CAL-EXT option.)

Automatic Maintenance Log

Extended Tracking Range (standard)

When the analyzer reads over range, 20 ppm, it will continue to read, for tracking purposes, up to 100 ppm for a limited time

Construction

Enclosure:

NEMA 1 standard

CE Conformance

Provides added EMI/RFI and conducted interference immunity

Weight:

18 lbs. (8 kg.)
40 lbs. (18 kg.)
with calibration system

Electrical

Back Lighted Display 2.5" x 3.75" SuperTwist LCD graphics

Audible/Visual Alarm Status Indicators

(Output relays available – See Options – Relay Contacts)

4 oxygen levels, temperature and electrolyte condition (standard)
Loss of flow alarm indicator (optional)

Relays (Optional)

(Failsafe action upon loss of power to alarm condition)

Up to 4 non-latching, independently assignable to alarms or calibration-in-process indicator. SPDT contacts rated for 5 amps at 30 VDC.

Power Requirements

100-120 VAC, 50/60 Hz (standard); 200-240 VAC, 50/60 Hz (optional); NiCAD battery (optional)

Output Signals

Analog Outputs:

Menu scaleable single output range of 0-2 ppb up to 0-20 ppm

Non- Isolated 4-20 mADC, 0-1, 0-2, 0-5, or 0-10 VDC (standard)

Isolated 4-20 mADC, 0-1, 0-2, 0-5, or 0-10 VDC (optional)

Expanded Range Scales (standard)

(Requires optional Alarm Relay for remote identification of range)

Two user selectable secondary analog output ranges for re-scaling the output once the primary range is exceeded

Digital Output:

2-Way RS232 or RS485 (optional)

Calibration Control

Calibration-In-Process indication (requires an optional relay contact)

Analog output freeze control during calibration