

System Performance & Specifications

Gas Sample Conditions

Sample Pressure	
Operating limits:	15 to 150 psig (2.03 to 11.3 bar)
Sample Return Pressure	Atmospheric Vent (optimal)
Limits:	-2 to 2 psig (0.88 bar to 1.14 bar)
For H ₂ and He	Maximum limit: ± 1 psig
For all other background gases	Maximum limit: ± 2 psig
Flow Rate:	
Operating:	2 to 5 slpm N ₂ (Contact factory for other background gases)
Bypass:	0.25 to 2.5 slpm
Sample Line Temperature	
Heat Trace to 140°F (60°C)	Limits: 50° to 176°F (10° to 80°C)
	For best results, maintain sample line at 60°C
Pneumatic Pressure	60 to 100 psig

Gas Flow System

Construction Materials 300 Series stainless steel

Gas Connections

System: ¼ inch VCR compatible inlet fitting
¼ inch compression bypass outlet fitting
¼ inch compression outlet fitting to vacuum pump
⅛ inch compression fitting for pneumatic gas inlet

Pump: ¼ inch compression inlet/outlet fittings on vacuum pump

Gas Delivery System Components

Pneumatically actuated springless diaphragm valves, orbital butt welded assembly with zero dead volume for sensor isolation and zero verification

High capacity purifier provides moisture and oxygen-free zero gas (Not compatible on oxygen samples)

Heated and temperature controlled sample delivery system

Integral pressure regulator with minimal wetted area

Bypass loop with flow control

Maintenance & Logging

Data Logging & Graphing

Analyzer can store years of continuous data, downloadable in monthly blocks

Automatic Maintenance Log

Self checking, maintains records satisfying many ISO 9000 requirements

Construction

Enclosure: NEMA 1 in 19" Rack Mount

Dimensions: 19"(48.3cm) W x 10.5"(26.7cm) H x 22.5" (57.2cm) D

Weight: 72 lbs. (32.6 kg.)

Hydrogen Safety

Optional safety system for use with hydrogen includes Sample Delivery Interlock and Case Purge Valves for instrument housing and NEMA 4 enclosure and Z-purge protection system for external vacuum pump.

Optional Hydrogen Safety System can be ordered with or without the NEMA 4 enclosure and Z-Purge Protection System for the vacuum pump.

NEMA 4 pump enclosure is 16.6" (42.4cm) W x 14.5" (36.8 cm) H x 11.6" (29.5cm) D

NOTE: Hydrogen Safety system requires the dedicated use of one of the oxygen relays

Electrical

Back Lighted Display 7.4" VGA Monochrome (640x480)

Visual Alarm Status Indicators

4 oxygen levels, 4 moisture levels, temperature, electrolyte condition, moisture sensor diagnostic, loss of flow, zero verification or calibration-in-process, moisture analyzer off-line, oxygen analyzer analog output freeze control during calibration

Relays

(Failsafe action upon loss of power to alarm condition)

4 non-latching, independently assignable to oxygen alarms or oxygen calibration-in-process indicator and 4 non-latching independently assignable to moisture alarms. SPDT contacts rated for 1 amps at 30 VDC

Power Requirements

100-120 VAC @ 5A, 50/60 Hz (standard); 200-240 VAC @ 2.5A, 50/60 Hz (optional). Configurable at factory.

Output Signals

Analog Outputs:

Menu scaleable single output range:

Moisture: 0-2 ppb up to 0-10 ppm
Oxygen: 0-2 ppb up to 20 ppm

Isolated 4-20 mADC for both moisture and oxygen

Choice of either 0-1, 0-2, 0-5, or 0-10 VDC for moisture and oxygen

Expanded Range Scales

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

NanoTrace Dual

DF-760E

Specifications & Configuration Guide

Oxygen System

Lowest Detection Level	75 ppt
Resolution	
Analytical (<i>Sensitivity-smallest detectable change</i>)	50 ppt
Display	10 ppt
Accuracy (greater of)	±3% of reading or ±0.1 ppb (Constant Conditions)
Speed of Response (typically)	< 10 seconds
<i>Time to reach 90% of final reading in either direction</i>	
Upset Recovery Time	<5 minutes
<i>Time from high ppm upset to within 10 ppb of the previously stable reading</i>	
Range	0-20 ppm
Ambient Operating Temperature	50° to 105° F (10° to 40° 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>	
Extended Tracking Range (standard)	
<i>When the analyzer reads over range, 20 ppm, it will continue to read, for tracking purposes, up to 100 ppm for a limited time</i>	

Moisture System

Lowest Detection Level	200 ppt
Resolution	
Analytical (<i>Sensitivity-smallest detectable change</i>)	100 ppt
Display	10 ppt
Accuracy (greater of)	±3% of reading or ±0.2 ppb (Constant Conditions)
Speed of Response (typically)	10 minutes
<i>Time to reach 90% of an upward step challenge</i>	
Upset Recovery Time	< 5 minutes
<i>Time from high ppb upset to within 10 ppb of the previously stable reading</i>	
Range (Output Scale)	0-10 ppm
Ambient Operating Temperature	50° to 105° F (10° to 40° C)
Background Gas Compatibility	
<i>All inert and passive gases including N₂, He, H₂, Ar, and O₂</i>	
<i>Includes Scale Factor as standard which permits accurate read-out of moisture in background gases other than nitrogen.</i>	

Ordering Codes

Base Models

760-0020 NanoTrace Dual Analyzer

-V (added to model number)
230 VAC/50/60 Hz Input Power

Outputs

(pick one Serial Communication)

760-RS232 Two-way Serial Communications

760-RS485 Two-way Serial Communications

(pick one VDC output)

760-OS-1 0-1 VDC for both moisture and oxygen

760-OS-2 0-2 VDC for both moisture and oxygen

760-OS-5 0-5 VDC for both moisture and oxygen

760-OS-10 0-10 VDC for both moisture and oxygen

Plumbing

760-HSS1 Hydrogen Safety System with Pump Purge
Includes Sample Delivery Interlock and Case Purge valves for instrument housing, and enclosure with purge protection system for vacuum pump.

760-HSS2 Hydrogen Safety System without Pump Purge
Same as above, except vacuum pump is mounted on bracket only and does not include purge protection system.

Cabinet

760-KYLK Key Lock

Miscellaneous

DF-E07 Electrolyte Solution (One charge)

NanoTrace Dual Configuration Guide

Rev. Date: December 1, 2000

DF-760E

Standard Features & Specifications

Performance

Lowest Detection Level	200 ppt
Resolution	
Analytical (<i>Sensitivity-smallest detectable change</i>)	100 ppt
Display	10 ppt
Accuracy (greater of)	±3% of reading or ±0.2 ppb (Constant Conditions)
Speed of Response (typically)	10 minutes <i>Time to reach 90% of an upward step challenge</i>
Upset Recovery Time	< 5 minutes <i>Time from high ppb upset to within 10 ppb of the previously stable reading</i>
Range	0-20 ppm
Ambient Operating Temperature	50° to 105° F (10° to 40° C)
Background Gas Compatibility	All inert and passive gases including N ₂ , He, H ₂ , Ar, and O ₂ Includes Scale Factor as standard which permits accurate read-out of moisture in background gases other than nitrogen.

Gas Sample Conditions

Sample Pressure	
<i>Operating limits:</i>	15 to 150 psig (2.03 to 11.3 bar)
Sample Return Pressure	Atmospheric Vent (optimal) Limits:-2 to 2 psig (0.88 bar to 1.14 bar)
Flow Rate:	
<i>Operating:</i>	1 to 4 slpm N ₂ (Contact factory for other background gases)
<i>Bypass:</i>	0.25 to 2.5 slpm
Sample Line Temperature	
Heat Trace to 140°F (60°C)	Limits: 50° to 176°F (10° to 80°C) For best results, maintain sample line at 60° C
Pneumatic Pressure	60 to 100 psig

Gas Flow System

Construction Materials	300 Series stainless steel
Gas Connections	¼ inch VCR compatible inlet fitting ¼ inch compression outlet fitting to vacuum pump ¼ inch compression inlet/outlet fittings on vacuum pump ¼ inch compression bypass outlet fitting ⅛ inch compression fitting for pneumatic gas inlet
Gas Delivery System Components	Pneumatically actuated springless diaphragm valves, orbital butt welded assembly with zero dead volume for sensor isolation and zero verification High capacity moisture dryer provides moisture-free zero gas Heated and temperature controlled sample delivery system Integral pressure regulator with minimal wetted area Bypass loop with flow control

Construction

Enclosure:	NEMA 1 in 19" Rack Mount
Dimensions:	19" (48.3cm) W x 10.5" (26.7 cm) H x 22.5" (57.2 cm) D
Weight:	68 lbs. (31 kg.)

Maintenance & Logging

Data Logging & Graphing

Analyzer can store years of continuous data, downloadable in monthly blocks

Automatic Maintenance Log

Self checking, maintains records satisfying many ISO 9000 requirements

Electrical

Back Lighted Display 7.4" VGA Monochrome (640x480)

Visual Alarm Status Indicators

4 moisture levels, temperature, moisture sensor diagnostic, loss of flow, zero verification-in-process, analyzer off-line, expanded range

Relays

(Failsafe action upon loss of power to alarm condition)

4 non-latching, independently assignable to alarms or indicators. SPDT contacts rated for 1A at 30 VDC.

Power Requirements

100-120 VAC @ 5A, 50/60 Hz (standard); 200-240 VAC @ 2.5A, 50/60 Hz (optional). Configurable at factory.

Output Signals

Analog Outputs:

Menu scaleable single output range of 0-2 ppb up to 0-10 ppm

Isolated 4-20 mA DC, and choice of 0-1, 0-2, 0-5, or 0-10 VDC

Expanded Range Scales

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, configurable at factory

Hydrogen Safety

Optional safety system for use with hydrogen includes Sample Delivery Interlock and Case Purge Valves for instrument housing and NEMA 4 enclosure and Z-purge protection system for external vacuum pump.

Optional Hydrogen Safety System can be ordered with or without the NEMA 4 enclosure and Z-Purge Protection System for the vacuum pump.

NEMA 4 pump enclosure is 16.6" (42.4cm) W x 14.5" (36.8 cm) H x 11.6" (29.5cm) D

NOTE: Hydrogen Safety system requires the dedicated use of one of the oxygen relays

CE