

# 9.4 Troubleshooting Guide for the NanoTrace Dual Analyzer

## 9.4.1.1 Oxygen Troubleshooting

Observation	Possible Remedy (see Key below)
Analyzer reads Over-Range	Y, C, Q, I
Analyzer spikes excessively when moved using portable feature	B, J, I
Analyzer output has unacceptable peak-to-peak noise	J, H, X, I
Zero baseline gradually drifting positive	G, A, B, C, D, Q, H, AB, I
Zero baseline gradually drifting negative	P
Zero baseline high, but stable (> 15 ppb above factory zero)	G, A, B, C, D, E, Q, AB, I
Very slow analyzer purge down (doesn't drop below 10 ppb in 7 days)	G, A, B, C, D, E, Q, H, AB, I
Zero baseline drifting up and down (exclusive of temperature)	H, Q, I
Repetitive negative spiking	J, X, Z, A, B, C, D, E, Q, H, I, AA
Repetitive positive spiking	J, X, Z
O <sub>2</sub> reading is drifting excessively with ambient temperature (> 0.3 ppb/C)	E, G, P, R, AB, I
Electrolyte Condition Alarm ON	A, N, C, D, H, I
O <sub>2</sub> reading does not decrease upon switch to on-board Delta F purifier(Assumes sample gas contains some O <sub>2</sub> )	O
Span reading is unacceptably high (> 50% high)	T, V, S, I
Span reading is unacceptably low (> 50% low)	T, S, I, H
Unacceptably Slow Speed of Response	L, G, H, I
Analyzer indicates high temperature	AB, I

## 9.4.1.2 Key:

A	Add deionized water if level is near or below "MIN" mark
B	Remove some electrolyte if level is near or above "MAX" mark
C	Measure applied voltages on electrode pairs:
	Sensor Electrodes (wht/yel* and wht/red/blk) 1.300 ± 0.005 VDC
	Secondary Electrodes (wht/blue* and wht/red) 2.1 ± 0.3 VDC
	Stablex Electrodes (white* and blue) 1.55 ± 0.005 VDC
	* is the common lead of the voltmeter.
D	Measure the DC currents on electrode pairs: Secondary Electrodes 2.0 ± 0.2 mADC (disconnect wht/red wire at reservoir terminal, and insert ammeter between wht/red wire and reservoir terminal) Stablex Electrodes < 13 uADC (disconnect white wire at reservoir terminal, and insert ammeter between white wire and reservoir terminal)
E	Check sensor temperature in Diagnostics Menu. It should be approx. equal to the current ambient temperature.
G	Perform the low flow leak test: Obtain stable oxygen readings at flow = 2.0 scfh and flow = 1.0 scfh. The reading at flow = 1.0 scfh should be no more than 2 ppb higher than that at 2.0 scfh. Locate and fix any ambient leaks upstream of the analyzer. See page 108.
H	Empty electrolyte, rinse sensor thoroughly with DEIONIZED water, and refill sensor with fresh electrolyte. Restart analyzer on zero gas and allow a minimum of 4 days for the analyzer to purge down.
I	Contact the Delta F Customer Support Services Dept. for additional assistance with the results of the troubleshooting.

	Phone # (781) 935-5808 Fax # (781) 932-0053
J	Adjust Filter Settings to Ultra Low LDL. Transient Rejection ON.
L	Adjust Filter Settings to Normal, Transient Rejection OFF
N	Make sure sensor cap is secure.
O	Check for purifier breakthrough. With the Delta F Corporation on-board purifier in-line, obtain stable oxygen readings at a flow rate of 2.0 scfh and at a flow rate of 0.5 scfh. The reading at 2.0 scfh should not be higher than the reading at 0.5 scfh. If it is, replace the purifier.
P	This is typical Analyzer behavior following a start-up. Perform a Manual or Auto Zero Calibration.
Q	Examine outside of sensor for evidence of electrolyte residue.
R	Quantify the drift effect with temperature changes (identify a $\pm$ correlation). Appropriately adjust the temperature compensation set point.
S	Make sure the span background gas is properly accounted for using SPAN GSF in the menu.
T	Check the accuracy and age of the calibration reference cylinder.
V	Perform a low flow leak test while the span gas cylinder is connected. Obtain a stable reading at a flow rate of 2.0 scfh and at a flow rate of 0.5 scfh. Reading should be lower at 0.5 scfh. If not, investigate for leakage and fix.
X	Remove any devices being driven by the analyzer output, i.e. chart recorders or Data Acquisition Systems. Also disconnect anything controlled by the analyzer alarm relays. Verify proper operation with these devices removed.
Y	Verify that a flow rate of 2.0 scfh of zero gas has been established. Allow 10 minutes time after zero gas connection to come on scale.
Z	Assure that spiking is not due to EMI (i.e. radio communications).
AA	Remove any devices downstream of the analyzer which may cause backpressure.
AB	Make sure the fan is operating and proper ventilation exists.

### 9.4.1.3 Moisture Troubleshooting

The DF-700 series moisture analyzer constantly performs internal monitoring of the analyzer operation. In the event of a failure a system alarm will be displayed on the front panel. In addition the failure will be logged in the System Error Log (see page 50). In the event of a system alarm contact Delta F with information as displayed in the log as well as on the Signal Monitor screen as shown on page 59.