ON736

Oxygen/Nitrogen

Specification Sheet

Instrument Range*		**Precision****	
Oxygen:	0.0005 mg to 21 mg (0.5 ppm to 0.2 % for a 1 g sample)	Oxygen:	0.00025 mg (0.25 ppm) or 0.5 % RSD, whichever is greater
Nitrogen:	0.0005 mg to 30 mg (0.5 ppm to 3.0 % for a 1 g sample)	Nitrogen:	0.00025 mg (0.25 ppm) or 0.5 % RSD, whichever is greater
Calibration	Standards (single or multi-point); manual; gas dose‡		
Analysis Time§			
Oxygen:	He: 85 s	Ar: 95 s	
Nitrogen:	He: 100 s	Ar: 130 s	
Cycle Time§ *(including outgas, purge, analysis delay, and analysis time)*			
He Carrier Gas:	180 s	Ar Carrier Gas:	210 s
Sample Size	1 g (nominal)		
Detection Method	Non-Dispersive Infrared Absorption; Thermal Conductivity		
Chemical Reagents	• Anhydrous Magnesium Perchlorate ($Mg(ClO_4)$) • Sodium Hydroxide on an Inert Base • Oxygen/Moisture Indicating Tube‡	• Rare Earth Copper Oxide • Copper Turnings, Sticks‡	
Gas Requirements			
Carrier	Helium (99.99 % pure), 22 psi (1.5 bar) ± 5 %	Argon (99.999 % pure), 22 psi (1.5 bar) ± 5 %	
Pneumatic:	Compressed Air, 40 psi (2.8 bar) ± 10 %, source must be oil and water free		
Gases Optional			
Gas Dose:	Carbon Dioxide, 99.99 % pure, 20 psi (1.4 bar) ±10 %		
Gas Dose:	Nitrogen, 99.99 % pure, 20 psi (1.4 bar) ± 10 %		
Gas Flow Rates	Carrier: 480 cm^3/min	Pneumatic: 280 cm^3/min	
Furnace	Impulse furnace with current and power control 7500 W maximum, liquid cooled		
Coolant	3.2 L LECO Coolant		
Operation Conditions	Temperature: 15 °C to 35 °C (59 °F to 95 °F)	Rel. Humidity: 20 % to 80 %, non-condensing	
Sound Pressure Level	61 dBa excluding vacuum (max reading at operator's level per IEC/EN 61010-1)		
Dimensions††	36 in H × 28 in W × 34 in D (91 cm × 71 cm × 86 cm) with touch-screen monitor		
Electrical Power	230 V~ (+ 10/-15 %; at max load); 50 A, 50/60 Hz, Single Phase; 12500 Btu/h‡		
Weight (approx.)	Analyzer: 400 lb (181 kg) without touch-screen monitor		

Part Numbers

ON736-XXXXC	Oxygen/Nitrogen Determinator with software and external PC

Options

NOTE: Multiple configurations of options are available. Please contact your local LECO Sales Engineer for more details.

- Unit with PC, touch-screen monitor package (C)
- Optional mounted touch-screen monitor package (M)
- Optional automatic cleaner package (H)
- Optional performance package (P)
- Optional dual cooling upgrade package (D)

* *Use the following formula to calculate element concentration:*
*% element concentration = [(absolute element mass in mg)/(sample mass in mg)]*100*
** *One , conformance tested by gas dose analysis.*
† *Average output based on nominal operating parameters.*
§ *All times listed are nominal, actual times may vary based on method settings and application.*
†† *Allow for a 6 in (15 cm) minimum access area around all sides.*
‡ *Optional.*

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Theory of Operation

The ON736 Oxygen/Nitrogen system is designed for simultaneous measurement of oxygen and nitrogen content of steel and other inorganic materials. The instrument features custom software designed specifically for touch operation.

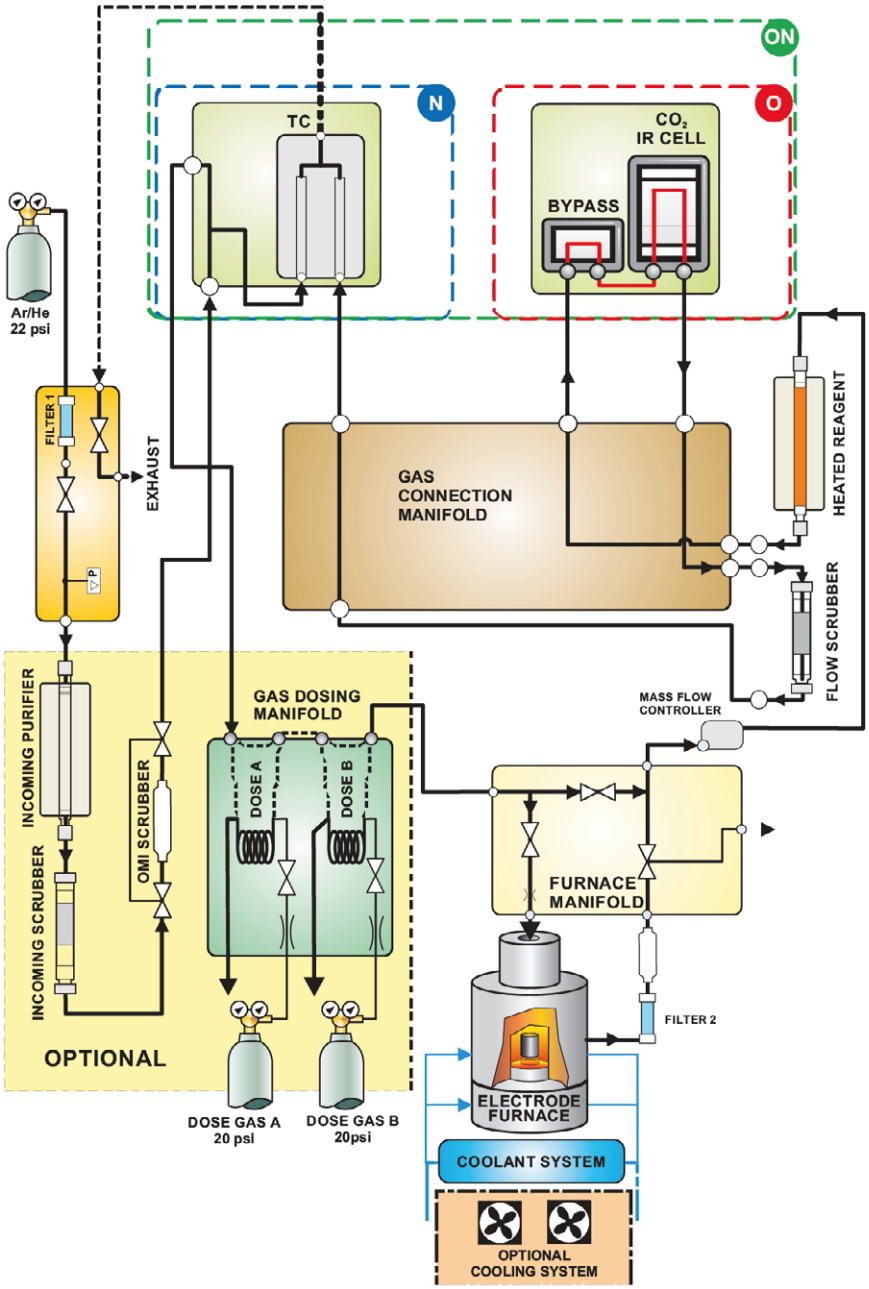
A pre-weighed sample is placed in a graphite crucible which is heated in an impulse furnace to release analyte gases. Oxygen present in the sample reacts with the graphite crucible to form CO and CO_2 . An inert gas carrier, typically helium, sweeps the liberated gases out of the furnace and through a Mass Flow Controller. The gas then flows through a heated reagent, where the CO is oxidized to form CO_2 , and H_2 is oxidized to form H_2O. Oxygen is detected as CO_2 using a non-dispersive infrared (NDIR) cell. CO_2 and H_2O are then scrubbed out of the carrier gas stream. A Thermal Conductivity (TC) detector is used to detect the remaining nitrogen.

The detection system is comprised of both NDIR and TC detectors. NDIR cells are based on the principle that analyte gas molecules absorb infrared (IR) energy at unique wavelengths within the IR spectrum. Incident IR energy at these wavelengths is absorbed as the gases pass through the IR absorption cells. TC detection takes advantage of the difference in thermal conductivity between carrier and analyte gases. Resistive TC filaments are placed in a flowing stream of carrier gas and heated by a bridge circuit. As analyte gas is introduced into the carrier stream, the rate at which heat transfers from the filaments will change producing a measurable deflection in the bridge circuit.

The concentration of an unknown sample is determined relative to calibration standards. To reduce interferences

Flow Diagram Shown for ON736 Configuration

Configuration-specific flow diagrams available on request



Specifications and part numbers may change.
Consult LECO for latest information.

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