OH836 Oxygen/Hydrogen

Specification Sheet

Instrument Range* (1 g sample)		
Oxygen:	0.00005** to 50 mg	
Hydrogen:	0.0001** to 2.5 mg	
Precision†		
Oxygen:	0.000025 mg or 0.3% RSD, whichever is greater	
Hydrogen:	0.00005 mg or 2% RSD, whichever is greater	
Analysis Time		
Oxygen:	85 seconds (including outgas, purge, and analysis delay)	
Hydrogen:	90 seconds (including outgas, purge, and analysis delay)	
Cycle Time	180 seconds (nominal)	
Calibration	Standards (single or multi-point); manual; gas dose	
Sample Size	1 g (nominal)	
Detection Method	Non-Dispersive Infrared Absorption	
Chemical Reagents	• Anhydrous Magnesium Perchlorate ($MgClO_4$) • Sodium Hydroxide on an Inert Base	• Copper Oxide, Copper Turnings • Oxygen/Moisture Indicating Tube
Gas Requirements		
Carrier:	He: (99.99% pure), 22 psi (1.5 bar) ±5%	Ar: (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 Flow Rates		
Carrier:	460 cc/minute	
Pneumatic:	280 cc/analysis	
Furnace	Impulse furnace with current and power control 7500 Watts maximum, liquid cooled	
Coolant	3.2 L LECO Coolant	
Operating Conditions		
Temperature	15 to 35°C (59 to 95°F)	
Rel. Humidity	20 to 80%, non-condensing	
Dimensions††		
Height:	36 in. (91.5 cm) nominal; 39.25 in. (100 cm) with load head cover lift engaged	
Width:	27.75 in. (71 cm)	
Depth:	30 in. (76 cm) without monitor; 31.5 in. (80 cm) with attached touch-screen monitor	
Electrical Power	230 V~ (+10/-15%; at max load); 50A, 50/60 Hz, Single Phase; 12,500 BTU/hr‡	
Weight (approximate)	Analyzer: 410 lb. (186 kg) without touch-screen monitor	

**Use the following formula to calculate element concentration:*
*% element concentration = ((absolute element mass in mg)/(sample mass in mg))*100*
***Lower range is calculated as 2 σ instrument blank deviation. Method range may differ due to factors such as sample type and method parameters.*
†Calculated as 1 σ instrument blank deviation. Method precision may differ due to sample inhomogeneity or other external factors.
††Allow for a 6 in. (15 cm) minimum access area around all sides.
‡Average output based on nominal operating parameters.
V~ denotes VAC.

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Part Numbers

OH836-MC	O/H w/PC and touch-screen
OH836-C	O/H w/PC
OH836-HC	O/H w/PC and autocleaner
OH836-HMC	O/H w/PC, touch-screen, and autocleaner

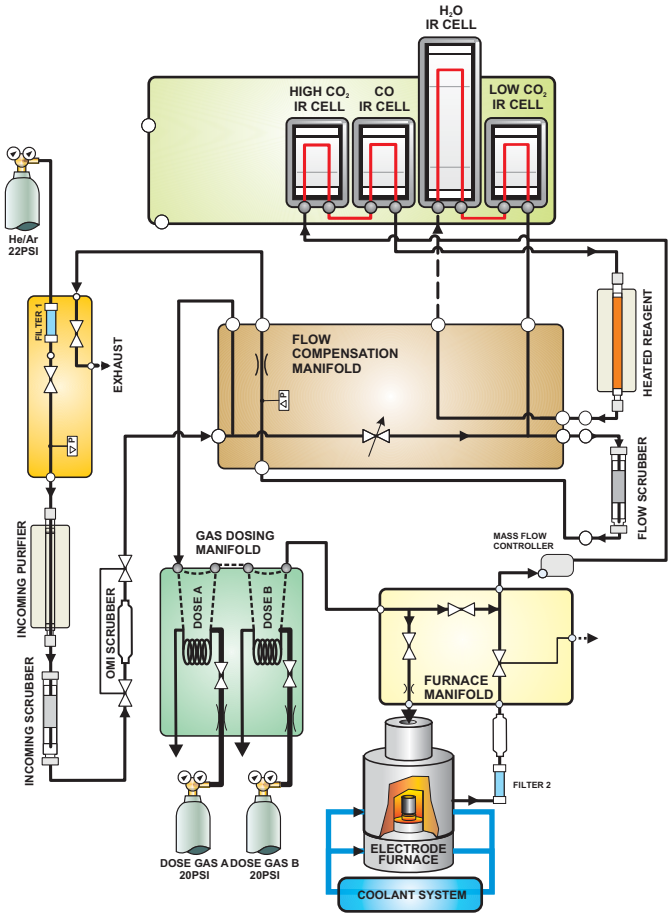
Theory of Operation

The OH836 Oxygen/Hydrogen system is designed for wide-range measurement of oxygen and hydrogen content of steel, refractory metals, and other inorganic materials. The patented detection system supports the true simultaneous analysis of oxygen and hydrogen during a single analysis, with one crucible. The instrument features custom MS Windows®-based software designed specifically for touch operation.

A pre-weighed sample is placed in a graphite crucible which is then heated in an impulse furnace to release analyte gases. An inert gas carrier, typically helium, sweeps the liberated analyte gases out of the furnace and through a Mass Flow Controller to a series of detectors. Oxygen present in the sample reacts with the graphite crucible to form CO and CO_2, which are detected using non-dispersive infrared (NDIR) cells. 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. The gas then continues through another set of NDIR cells where H_2O and CO_2 are detected. These analytes are then scrubbed out of the carrier gas stream.

The detection system is comprised of a NDIR detector. NDIR cells are based on the principle that CO, CO_2, and H_2O 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. The complete set of CO and CO_2 NDIR cells is required to give the most accurate oxygen results for a wide range of sample types and concentrations. The concentration of an unknown sample is determined relative to calibration standards. To reduce interferences from instrument drift, NDIR reference measurements of pure carrier gas are made prior to each analysis.

Flow Diagram



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