CS844ES/S844ES

Carbon/Sulfur Determinator

Specification Sheet

Instrument Range*	
Carbon/Sulfur**:	0.0006 mg to 60 mg
ES Sulfur**:	0.0001mg to 0.05 mg
Precision†	
Carbon/Sulfur:	0.0003 mg or 0.5% RSD, whichever is greater
ES Sulfur:	0.00005 mg or 0.5% RSD, whichever is greater
Calibration	Standards (single or multipoint); manual; gas dose
Analysis Time§	40 s (nominal); 120 s (ES mode)
Cycle Time§	130 s (nominal); 270 s (ES mode); including gas, purge, analysis delay, and analysis time
Throughput	27 samples/h (nominal); 13 samples/h (ES mode)
Sample Size	1 g (nominal)
Detection Method	Non-Dispersive Infrared Absorption
Chemical Reagents	• Anhydrous Magnesium Perchlorate ($MgClO_4$) • Sodium Hydroxide on an Inert Base • Platinized Silica Gel • Rare Earth Copper Oxide • Cellulose
Gas Requirements	Carrier: Oxygen, 99.5% pure, 35 psi (2.41 bar) ±10% Pneumatic: Compressed Air (oil, water free), 40 psi (2.76 bar) ±10% Dosing: Carbon Dioxide, 99.99% pure, 20 psi (1.38 bar) ±10%
Gas Flow Rates	Carrier: 3 L/min (nominal); 0.8 L/min (ES mode) Pneumatic: 1 L/min
Furnace	Induction, 2.2 kW max (rampable 0% to 100% power), liquid cooled
Coolant	300 mL LECO Coolant
Operating Conditions	Operating Temp: 15 °C to 35 °C (59 °F to 95 °F) Rel. Humidity: 20% to 80% (non-condensing)
Sound Pressure Level	62 dBa excluding vacuum (max reading at operator's level per IEC/EN 61010-1)
Physical Dimensions††	33 in H x 26 in W x 30 in D (84 cm x 64 cm x 75 cm) with touch-screen monitor
Electrical Power Requirements	230 V~ (+10/-15% at max load); 50/60 Hz, single phase, 25 A; 5500 Btu/h‡
Weight (approx.)	308 lb (140 kg) with monitor 292 lb (132 kg) without monitor

Part Numbers	
CS844ES-MC	Carbon/Sulfur Determinator with software, mounted touch-screen monitor, and external PC
S844ES-MC	Sulfur Determinator with software, mounted touch-screen monitor, and external PC

Options

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

**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.
§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.
‡Average output based on nominal operating parameters.

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Theory of Operation

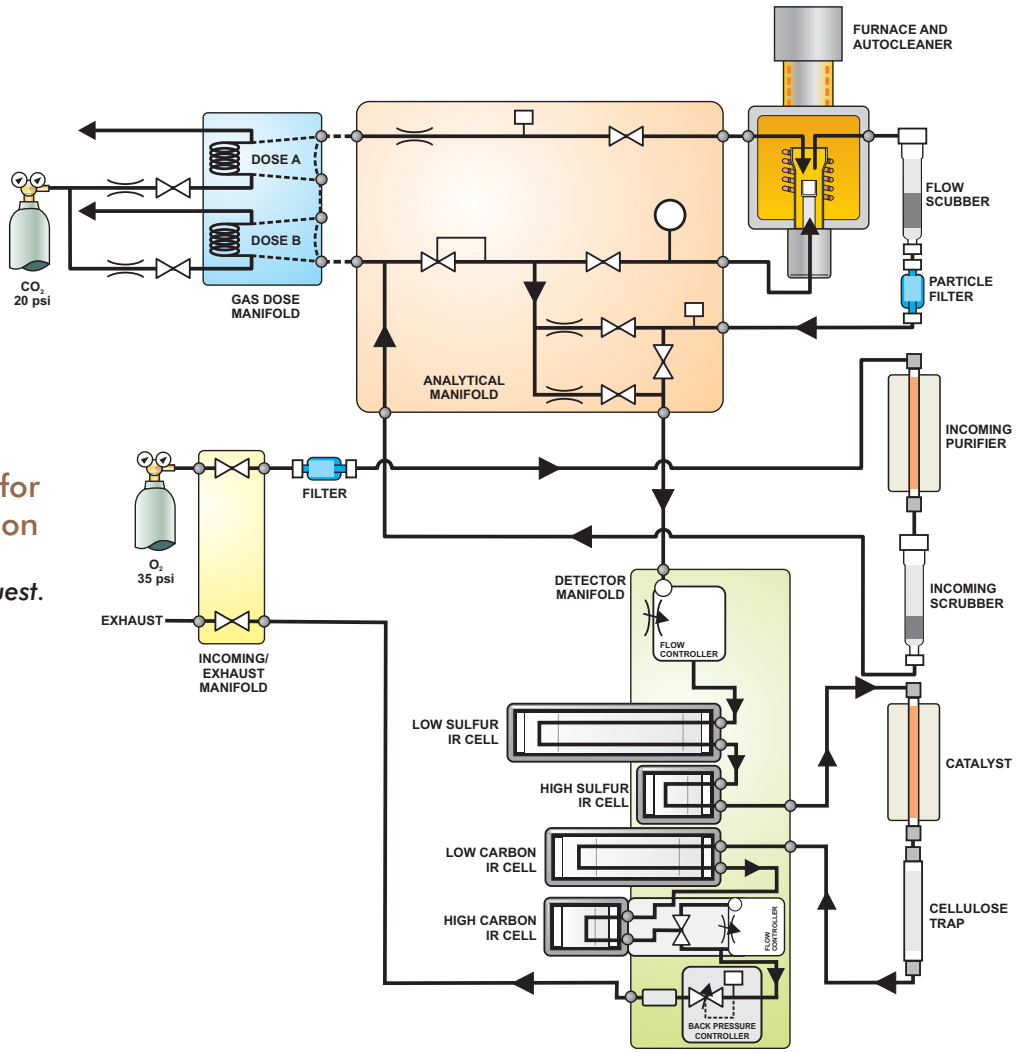
The CS844ES/S844ES Sulfur systems are designed for wide-range measurement of sulfur content of metals, ores, ceramics, and other inorganic materials. The instrument features custom MS Windows-based software designed specifically for touch operation.

A pre-weighed sample of approximately 1 g is combusted in a stream of oxygen. Sulfur present in the sample is oxidized to sulfur dioxide (SO_2), and swept by the oxygen carrier through a heated dust filter, a drying reagent, and then through two non-dispersive infrared (NDIR) cells, where sulfur is detected as SO_2.
A pressure controller is used to maintain constant pressure in the NDIR cells so as to reduce interference from natural variations in atmospheric pressure. The final component in the flow stream is an electronic flow sensor, which is used for diagnostic purposes to monitor the carrier flow.

Non-dispersive infrared cells are based on the principle that SO_2 absorbs infrared (IR) energy at unique wavelengths within the IR spectrum. Incident IR energy at these wavelengths is absorbed as the gases pass through IR absorption cells. Since absorption is dependent upon the path length, short and long path-length IR cells are provided for measurement of high and low range signals. The software automatically selects which cell to use for optimum measurement. The concentration of unknown samples is determined relative to calibration standards. To reduce interferences from instrument drift, reference measurements of pure carrier gas are made prior to each analysis.

Flow Diagram Shown for CS/S844ES Configuration

Configuration-specific flow diagrams available on request.



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

LECO Corporation
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