### CS600 Carbon/Sulfur Determinator Specification Sheet

#### Instrument Range at 1 g*
- **Carbon:** 0.6 ppm to 6.0%
- **Sulfur:** 0.6 ppm to 0.4%

#### Precision**
- **Carbon:** 0.3 ppm or 0.5% RSD; whichever is greater
- **Sulfur:** 0.3 ppm or 0.5% RSD; whichever is greater

#### Readability'
- **Carbon:** 0.001 ppm
- **Sulfur:** 0.001 ppm

#### Calibration
- Standards (single or multi-point); manual; gas dose

#### Analysis Time
- 40 seconds nominal

#### Sample Size
- 1 g nominal

#### Detection Method
- Non-dispersive infrared absorption

#### Chemical Reagents
- Anhydrous Magnesium Perchlorate (MgClO₄)
- Sodium Hydroxide on an inert base
- Platinized Silica Gel
- Rare Earth Copper Oxide
- Cellulose

#### Gas Requirements
- **Carrier:** Oxygen, 99.6% pure, 35 psi (2.4 bar) ±10%
- **Pneumatic:** Compressed Air, 40 psi (2.8 bar) ±10%, source must be oil and water free
- **Dosing (optional):** Carbon: Carbon Dioxide, 99.99% pure, 20 psi (1.4 bar) ±10%

#### Gas Flow Rates
- **Carrier:** 3 liters/minute
- **Pneumatic:** 1 liter/minute

#### Furnace
- Induction; 18 MHz, 2.2 kW maximum (rampable; 0 to 100% power)

#### Data Storage
- **Weight List:** No practical limit
- **Result List:** No practical limit

#### Printer (external)
- Color Deskjet Printer (optional)
- Dot Matrix Printer (optional)

#### Environmental Conditions
- **Operating Temp:** 50 to 86°F
- **Rel. Humidity:** 20 to 80%, non-condensing

#### Single Furnace/Determinator Dimensions†
- 32 in. H x 28 in. W x 27 in. D (81 x 71 x 69 cm)

#### Electrical Power Requirements
- **230 V~ (±10%; at max load), 50/60 Hz, single phase, 20 A, 15,700 BTU/hr**

#### Weight (approximate)
- **CS600**
  - 355 lb. (161 kg)
- **Total Shipping**
  - 405 lb. (184 kg)

#### Part Numbers
- **CS600C**
  - Carbon/Sulfur Determinator with Windows®-based software, free-standing PC, and flat panel display

#### Options
- 618-430 Batch Loader Kit
- 625-511 Shuttle Loader Kit (SN 3185 and below)
- 625-512 Shuttle Loader Kit (SN 3186 and above)
- 621-434-110 Deskjet Printer Kit (110 V)
- 612-917 Dot Matrix Printer Kit (110 V); Serial
- 751-300-160 L-250 Balance and Interface Kit (0.1 mg)
- 750-000-160 L-050 Balance and Interface Kit (1.0 mg)
- 501-291 Oxygen Regulator
- 768-593 CO₂ Regulator
- 766-036 Air Regulator
- 615-763 SmartLine® Modem-Based Remote Diagnostics
- 710-198-B/O SmartLine Internet-Based Remote Diagnostics
- 604-570-110 ADA-200 Automatic Accelerator Dispenser (120 V~, 60 Hz, 15 W)
- 604-570-120 ADA-200 Automatic Accelerator Dispenser (220 V~, 50/60 Hz, 15 W)
- 603-620 ADM-10 Manual Accelerator Dispenser
- TF10 Dual-Tube Resistance Furnace (crucible burn-off)
- TF-1 Single-Tube Resistance Furnace (crucible burn-off)

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*The range may be extended beyond listed values.
**One sigma, conformance tested by gas dose analysis.
†Display capability.
‡Allow a 6-inch (15 cm) minimum access area around all units.
V~ denotes VAC.
Theory of Operation

The CS600 Carbon/Sulfur system is designed for wide-range measurement of carbon and sulfur content of metals, ores, ceramics, and other inorganic materials. The instrument features a Windows®-based operating system.

A pre-weighed sample of ~1 gram is combusted in a stream of purified oxygen. The carbon in the sample is oxidized primarily to carbon dioxide (CO₂) with some carbon monoxide (CO) possibly being produced. The sulfur is oxidized to sulfur dioxide (SO₂). These gases are swept, along with the oxygen, through a dust filter and drying reagent into an infrared furnace. The oxygen is then swept, along with some carbon monoxide (CO) possibly being produced. The carbon in the sample is oxidized primarily to carbon dioxide (CO₂) with some carbon monoxide (CO) possibly being produced. The sulfur is oxidized to sulfur dioxide (SO₂). These gases are swept, along with the oxygen, through a dust filter and drying reagent into an infrared furnace. The oxygen is then swept, along with some carbon monoxide (CO) possibly being produced. The carbon in the sample is oxidized primarily to carbon dioxide (CO₂) with some carbon monoxide (CO) possibly being produced. The sulfur is oxidized to sulfur dioxide (SO₂). These gases are swept, along with the oxygen, through a dust filter and drying reagent into an infrared furnace. The oxygen is then swept, along with some carbon monoxide (CO) possibly being produced. The carbon in the sample is oxidized primarily to carbon dioxide (CO₂) with some carbon monoxide (CO) possibly being produced. The sulfur is oxidized to sulfur dioxide (SO₂). These gases are swept, along with the oxygen, through a dust filter and drying reagent into an infrared furnace. The oxygen is then swept, along with some carbon monoxide (CO) possibly being produced. The carbon in the sample is oxidized primarily to carbon dioxide (CO₂) with some carbon monoxide (CO) possibly being produced. The sulfur is oxidized to sulfur dioxide (SO₂). These gases are swept, along with the oxygen, through a dust filter and drying reagent into an infrared furnace. The oxygen is then swept, along with some carbon monoxide (CO) possibly being produced. The carbon in the sample is oxidized primarily to carbon dioxide (CO₂) with some carbon monoxide (CO) possibly being produced. The sulfur is oxidized to sulfur dioxide (SO₂). These gases are swept, along with the oxygen, through a dust filter and drying reagent into an infrared furnace. The oxygen is then swept, along with some carbon monoxide (CO) possibly being produced. The carbon in the sample is oxidized primarily to carbon dioxide (CO₂) with some carbon monoxide (CO) possibly being produced. The sulfur is oxidized to sulfur dioxide (SO₂). These gases are swept, along with the oxygen, through a dust filter and drying reagent into an infrared furnace. The oxygen is then swept, along with some carbon monoxide (CO) possibly being produced. The carbon in the sample is oxidized primarily to carbon dioxide (CO₂) with some carbon monoxide (CO) possibly being produced. The sulfur is oxidized to sulfur dioxide (SO₂). These gases are swept, along with the oxygen, through a dust filter and drying reagent into an infrared furnace. The oxygen is then swept, along with some carbon monoxide (CO) possibly being produced.

Flow Diagram

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

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