CARBON SULPHUR ANALYSIS

CS-1232 CARBON SULPHUR ANALYSER







Features

IR Detection
advanced optical design

Fully Automated
48 position sample changer

Analysis Software
powerful features for accuracy

Applications
soil, cement, minerals and more

ACCURATE CARBON SULPHUR DETERMINATION

CS-1232



IR Detection
Advanced infrared detector with optical design for increased sensitivity

Automation
Fully integrated 48 position sample changer

Temp Range
Ambient to 1,400° C. Accuracy +/- 1° C

Robust Design
For maximum operational uptime

Overview

The CS-1232 Carbon and Sulphur Analyser is designed for the quantitative determination of Carbon and Sulphur in minerals and organic materials. The CS-1232 uses a vertical resistance furnace that significantly simplifies the design and makes automation much more reliable. The vertical furnace creates an “air gap” surrounding the combustion crucible within the combustion chamber, providing controlled and uniform heat transfer to the sample. This configuration minimises thermal gradients and reduces the risk of thermal shock associated with the introduction of cold combustion boats used in conventional analyser designs. Uniform furnace heating, combined with advanced thermal insulation, reduces power consumption to less than 15 A during operation at temperature.

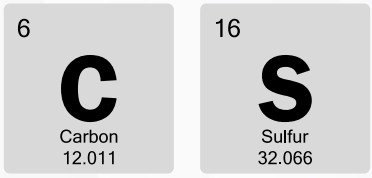
For high-throughput laboratories, the CS-1232 incorporates an integrated 48-position automated sample changer enabling sequential, unattended analysis with minimal operator intervention. Analytical results are automatically recorded and transferred to the LIMS, providing traceability and data management.

FEATURES



IR Detection

Advanced infrared optical design increases analytical sensitivity while eliminating the use of gold-coated reflective surfaces. Consequently, the IR system is less susceptible to signal attenuation caused by dirty samples or chemical species that strip gold coatings, including salts. System sensitivity and measurement stability are further enhanced through electronic modulation (“chopping”) of the infrared source, enabling discrimination of the analytical signal from background and electronic noise, resulting in substantially improved signal-to-noise ratio. Improved signal integrity and IR cell stability contribute to enhanced measurement precision and lower limit of detection. The CS-1232 is configured for Carbon and Sulphur analysis, with electronic circuitry identifying the unique properties of each IR signal. Load-balanced IR detection reduces power supply demand, while filtering suppresses noise and external interferences.



Carbon and Sulphur Measure Flow System

The CS-1232 measure flow pulls the combusted gases from the furnace, through the anhydrone reagent system which removes any unwanted moisture from the combusted gases, through the infrared detection system and finally pushes the SO2 and CO2 to a flow controller where the flow rate is set to prescribed rate of flow. The CS-1232 uses three Oxygen purges to remove any unwanted atmospheric gases. As the pump is drawing gases through the combustion system, the Oxygen purge flow rate is greater than that of the pump. This means that an Oxygen rich combustion environment is always ensured. The CS-1232 allows the operator for easy access to reagent replenishment, measure flow control and furnace temperature via the front access door.



Analysis Software

The software incorporates advanced calibration and signal-processing capabilities, including linearisation of the IR detector response. This allows the calibration curve to be adjusted to suit specific sample matrices and analytical concentration ranges, improving measurement accuracy, linearity, and result reproducibility.

The CS-1232 has advanced controls over the combustion cycle, including the determination of when sufficient combustion has occurred to terminate the analysis. This determination is enabled by the sensitivity and stability of the IR detection system, which accurately monitors the analytical signal to ensure consistent and reproducible analysis times.

CS-1232 CARBON SULPHUR ANALYSER

SPECIFICATIONS

Dimensions	76cm (width) x 66cm (depth) x 93cm (height)
Weight	~90 kg
Detection Method	Solid state Infrared Absorption for Carbon and Sulphur
Detection Range	Carbon cell to cover a range of 0.05% to 32% using 250 mg samples. Low Sulphur cell to cover a range of 0.005% to 4.0% using 250 mg samples. High Sulphur cell to cover a range of 0.05% to 38.0% using 250 mg samples. The upper and lower detection limits can be extended by increasing or decreasing the sample weight depending upon combustion characteristics of the sample types
Accuracy	+/- 1% of the Element present
Analysis Time	60 – 180 seconds (nominal) for coal samples
Sample Weights	Ores – 500 mg (nominal), Coal – 300 mg (nominal), Oils 100 mg (nominal)
Furnace	Vertical resistance furnace with single cylindrical silicon carbide heating element
Temperature Range	Ambient to 1,400°C. Accuracy +/- 1°C
Drying Towers & Filters	Two Magnesium Perchlorate Drying Towers. One Glass Wool Filter
Gases	Carrier Gas – Oxygen, 99.5% Purity, 275 kPa. Pneumatic Gas – Compressed Air, dry clean, 415 – 550 kPa. Incoming Gas Pressure Monitors
Computer	PC, Keyboard and Mouse, LED Monitor, Windows 10 Pro
Balance	Analytical grade 4-place (0.1 mg), Interfaced with PC
Crucibles	Non-porous ceramic
Power	115/240 VAC +/- 10%, Single Phase, 25 A (32 A outlet required)

We reserve the right to change the design or specification of our products without notice. Some of the information contained in this brochure is general in nature and customers should check that it is applicable to their individual circumstances.