



# ELEMENTRAC CS-*i* Series 2 Cell Configuration

## Specification Sheet: 88200-1010

	Carbon	Sulfur
<b>Instrument Range</b> *1 88200-1010 (1C/1S)	0.002 – 70 mg (2 ppm – 7% for a 1000 mg sample) (4 ppm – 14% for a 500 mg sample)	0.002 – 4.2 mg (2 ppm – 0.42% for a 1000 mg sample) (4 ppm – 0.84% for a 500 mg sample)
<b>Precision</b> *2	0.001 mg (1 ppm) or 0.4 % RSD whichever is greater	0.001 mg (1 ppm) or 0.4 % RSD whichever is greater
<b>Analysis time</b>	40 seconds (nominal)	
<b>Cycle time</b>	80 seconds (nominal)	
<b>Throughput</b>	45 samples per hour (nominal)	
<b>Typical sample size</b>	50 -1000 mg	
<b>Measuring method</b>	Combustion via Induction furnace followed by Infrared detection for carbon dioxide (C) and sulfur dioxide (S)	
<b>Chemical reagents</b>	<ul style="list-style-type: none"> <li>- Magnesium perchlorate</li> <li>- Sodium hydroxide</li> <li>- Platinized silica</li> <li>- Cellulose</li> </ul>	
<b>Gas requirements</b>	Oxygen 99.5% pure: 2 – 4 bar (30 – 60 psi), Compressed Air: 4 – 6 bar (60 – 90 psi)	
<b>Gas consumption</b>	Oxygen 180 l/h (during analysis)	
<b>Furnace</b>	Induction 2.2 kVA (power adjustable 0 – 100%)	
<b>Operation conditions</b>	15 – 35°C; 20 – 80% rel. humidity (not condensing)	
<b>Electrical power requirements</b>	230 VAC ±10%, 50/60 Hz; 16 A fuse	
<b>Weight</b>	Approx. 150 kg	
<b>Dimensions (W x H x D)</b>	520 x 840 x 750 mm	
<b>Required Accessories</b>	<ul style="list-style-type: none"> <li>- PC</li> <li>- TFT</li> <li>- Balance</li> </ul>	
<b>Options</b>	<ul style="list-style-type: none"> <li>- Carrier gas purification furnace</li> <li>- Autoloader</li> </ul>	

\*1 Other configurations / working ranges see next page or ask Eltra.

This configuration is recommended for samples with medium and high carbon concentrations and medium sulfur concentrations (cast iron, building materials). Lower working range is calculated based on 2 Sigma blank deviation. The limit of detection may be different depending on application and samples.

\*2 One sigma deviation; tested by gas dose and blank analysis; Nominal weight 1000 mg

# Theory of operation

The ELMENTRAC CS-*i* measures the carbon and sulfur content in mostly inorganic samples like steel, iron, cast iron, pure metals, alloys, cement and some organic samples like soil. The sample is combusted together with typical accelerators like tungsten, copper or additional iron in an oxygen stream. Here the induction furnace provides temperatures significantly above 2000 °C. The released combustion gases carbon dioxide and sulfur dioxide are a reaction product of the carbon and sulfur content in the sample and are measured in element selective infrared cells.

## Available configurations

Due to a wide variety of samples ELTRA provides different configurations to fit the user's requirements. On the one hand powerful configurations with 4 IR cells are available to cover a wide working range (like 88200-1008), on the other hand economic priced single element analyzers with one IR cell (like 88200-2001) are available when a reduced working range (e.g. C in cast iron) is required.

The ELTRA CS-*i* series can be equipped with customized IR cells to extend the working range and for special applications with IR cells containing a massive gold IR path. This leads to higher resistance versus halogens.

### Examples of configurations and working range:

(further working ranges on request)

ELTRA Part Number	Cell Configuration	Working Range, based on a 500 mg sample	
		Carbon	Sulfur
88200-1001	(1C)	0.1 – 7%	-
88200-1002	(2C)	0.0001 – 7%	-
88200-1003	(1S)	-	0.015 – 0.9%
88200-1004	(2S)	-	0.0001 – 4.5%
88200-1005	(1C, 1S)	0.1 – 7%	0.0001 – 0.3%
88200-1006	(2C, 1S)	0.0001 – 7%	0.0001 – 0.3%
88200-1007	(1C, 2S)	0.1 – 7%	0.0001 – 4.5%
88200-1008	(2C, 2S)	0.0001 – 7%	0.0001 – 4.5%

**ELTRA**<sup>®</sup>  
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