

# TruSpec<sup>®</sup> Micro Elemental Determinators and Micro Oxygen Add-On Module

## Specification Sheet



<b>Instrument Range (@ 2 mg)*</b>	Carbon: 0.002 to 100% Sulfur: 0.04 to 65%	Hydrogen: 0.02 to 50% Oxygen: 0.04 to 100%	Nitrogen: 0.02 to 50%
<b>Precision Range (@ 2 mg)</b>	Carbon: <1% RSD or $\pm 0.001$ (whichever is greater) Hydrogen: <1% RSD or $\pm 0.01$ (whichever is greater) Nitrogen: <1% RSD or $\pm 0.01$ (whichever is greater) Sulfur: <1% RSD or $\pm 0.02$ (whichever is greater) Oxygen: <1% RSD or $\pm 0.02$ (whichever is greater)		
<b>Analysis Time</b>	C/H/N: ~4 minutes	C/H/N/S: ~4 minutes	Oxygen: ~1 minute
<b>Nominal Sample Weight</b>	2 mg		
<b>Detection Method</b>	Carbon/Hydrogen/Sulfur/Oxygen: Optimized, low-noise, non-dispersive Infrared (IR) absorption Nitrogen: Optimized, low-drift, Thermal Conductivity (TC) cell		
<b>Gas Requirements</b>	Carrier: Helium (99.99% pure) @ 35 psi (2.4 bar) $\pm 10\%$ Combustion: Oxygen (99.99% pure) @ 35 psi (2.4 bar) $\pm 10\%$ Pneumatic: Compressed air (source must be oil and water free); 40 psi (2.8 bar) $\pm 10\%$		
<b>Furnace</b>	Resistance furnace; both primary and afterburner; up to 1100°C		
<b>Autoloader</b>	30-position (stackable to 120 samples)		
<b>Instrument Requirements</b>	TruSpec Micro CHN or CHNS		
<b>Operational Control</b>	Windows <sup>®</sup> -based software on external PC		
<b>Environmental Conditions</b>	Operating Temp: 15°C to 30°C (59°F to 86°F)      Humidity: 20% to 80%, non-condensing		
<b>Electrical Requirements</b>	Determinator: 230 V~ ( $\pm 10\%$ ; at max load), 50/60 Hz, single phase, 12 A; 9,500 BTU/hr** Oxygen Add-On: 230 V~ ( $\pm 10\%$ ; at max load), 50/60 Hz, single phase, 18A; 14,200 BTU/hr**		
<b>Physical Dimensions<sup>†</sup></b>	Determinator: 31 in. H x 27 in. W x 28 in. D (79 x 69 x 71 cm) Oxygen Add-On: 15 in. H x 12 in. W x 22 in. D (38 x 30 x 56 cm)		
<b>Weight (approx.)</b>	235 lb. (107 kg)	Shipping Weight (approx.): 285 lb. (129 kg)	
<b>Part Numbers</b>			
TRSMCHNC	TruSpec Micro CHN		
TRSMCHNSC	TruSpec Micro CHNS		
TRSOADD	TruSpec Micro Oxygen Add-On Module; compatible with TruSpec Micro models		
TRSOX	TruSpec Micro Oxygen Add-On Module; compatible with standard TruSpec CN & CHN models		
<b>Optional Accessories</b>			
751-600-120	Six-Place Electronic Micro-Balance Kit		
603-340	Microsample Liquid Kit		

\*Adjusting sample size may extend instrument range.

\*\*Average output based on nominal operating parameters.

†Allow a 6-inch (15 cm) minimum access area around all units.

V~ denotes VAC.

**LECO**<sup>®</sup>  
Delivering the Right Results

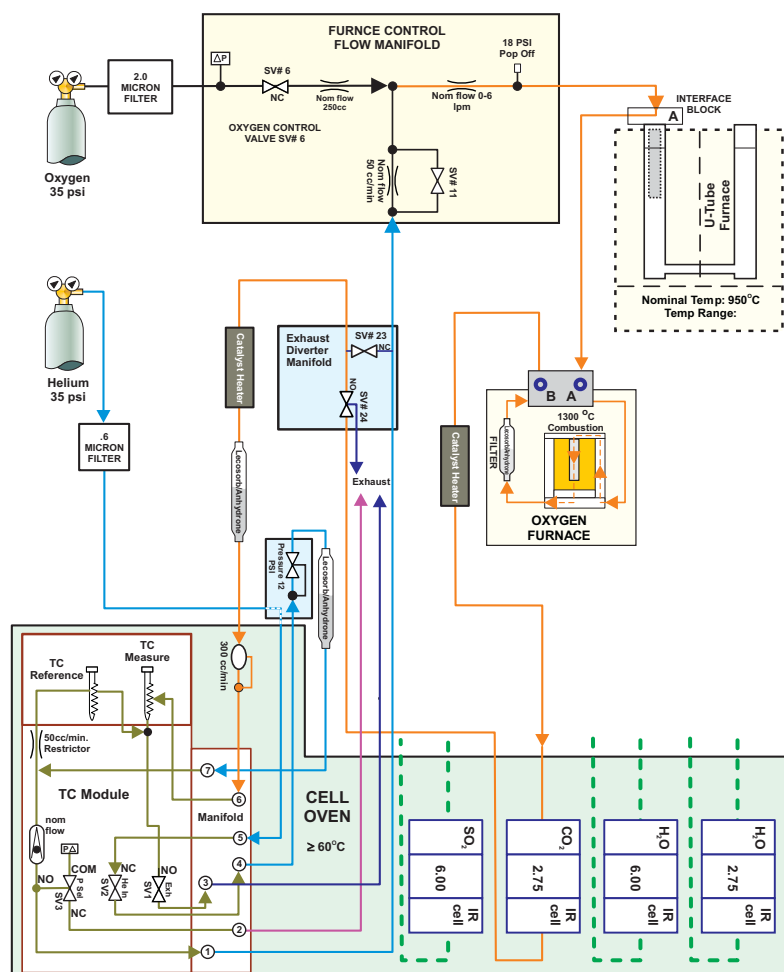
## Theory of Operation

The efficiency and speed of the TruSpec Micro CHN and CHNS is a result of the unique combination of a flow-through carrier gas system used in conjunction with individual highly selective, infrared (IR) and thermal conductivity detection systems.

A weighed micro sample is placed into the autoloader of the TruSpec Micro and is automatically dropped into the high-temperature combustion furnace, allowing the sample to combust. This combustion converts carbon to  $\text{CO}_2$ , hydrogen to  $\text{H}_2\text{O}$ , Nitrogen to  $\text{N}_2$ , and sulfur to  $\text{SO}_2$ . The combustion gases are swept from the furnace, through scrubbing reagents, and onto the detection systems as they are being released. Independent IR detectors are used for simultaneous detection of carbon, hydrogen, and sulfur. Nitrogen is measured using a thermal conductivity detection system. The entire analysis cycle is complete in approximately 4 minutes.

The optional micro oxygen add-on module enables the TruSpec Micro to determine oxygen content in organic matrices and is compatible with the both the TruSpec Micro CHN and CHNS models. Samples being analyzed for oxygen are placed into the autoloader of the micro oxygen add-on module and automatically dropped into a high-temperature pyrolysis furnace. The oxygen released during pyrolysis of the sample reacts with a carbon-rich environment in the furnace to form CO. The CO is swept from the furnace and converted to  $\text{CO}_2$  before measurement via infrared detector (approximately 1 minute analysis time).

## Flow Diagram



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

3000 Lakeview Avenue • St. Joseph, MI 49085 • Phone: 800-292-6141 • Fax: 269-982-8977  
info@leco.com • www.leco.com • ISO-9001:2008 HQ-Q-994 • LECO is a registered trademark of LECO Corporation.

LECO Corporation



Delivering the Right Results