628 Series Elemental Determinators

Specification Sheet

This instrument is now available in either Helium or Argon carrier gas models. The type of carrier gas used may affect some instrument specifications, as indicated below.

Instrument Range*	**Helium Model**	**Argon Model**
Carbon:	0.02** to 175 mg	0.02** to 175 mg
Hydrogen:	0.1** to 12 mg	0.1** to 10 mg
Nitrogen:	0.02** to 100 mg	0.06** to 100 mg
Precision Range†		
Carbon:	0.01 mg or 0.5% RSD, whichever is greater	
Hydrogen:	0.05 mg or 1.0% RSD, whichever is greater	
Nitrogen, Helium Model:	0.01 mg or 0.3% RSD, whichever is greater	
Nitrogen, Argon Model:	0.03 mg or 0.6% RSD, whichever is greater	
Sample Mass / Analysis Time (Analyzing EDTA at Nominal Mass)		
N (FP):	Up to 1000 mg, 500 mg nominal / **Helium:** 3.5 minutes	**Argon:** 4.0 minutes
CN Model:	Up to 500 mg, 250 mg nominal / **Helium:** 4.0 minutes	**Argon:** 4.5 minutes
CHN Model:	Up to 250 mg, 100 nominal mg / **Helium:** 5.0 minutes	**Argon:** 5.5 minutes
Detection Method		
Carbon/Hydrogen:	Non-Dispersive Infrared (IR) Absorption	
Nitrogen:	Thermal Conductivity (TC Cell) Detector	
Gases Required		
Carrier, Helium Model:	Helium (99.99% pure) @ 35 psi (2.4 bar) ±10%	
Carrier, Argon Model:	Argon (99.99% pure) @ 35 psi (2.4 bar) ±10%	
Combustion:	Oxygen (99.99% pure) @ 35 psi (2.4 bar) ±10%	
Pneumatic:	Compressed air (source must be oil and water free); @ 40 psi (2.8 bar) ±10%	
Furnace	Resistance furnace; both primary and afterburner; up to 1050°C	
Autoloader	30-position (stackable to 120 samples)	
Environmental Conditions	Operating Temp: 15°C to 35°C (59°F to 95°F) Humidity: 20% to 80%, non-condensing	
Dimensions††	32 in H x 27.5 in W x 30 in D (81 x 70 x 76 cm)	
Weight (approx.)	273 lb (124 kg)	Shipping Weight (approx.): 324 lb (147 kg)
Electrical Power Requirements	230 V~ (±10%; at max load), 50/60 Hz, single phase, 12 A; 4,000 Btu/hr‡	

Part Numbers - Helium Models	
CHN628C	CHN Determinator (Helium Model) with loader, PC, and monitor
CN628C	CN Determinator (Helium Model) with loader, PC, and monitor
FP628C	N Determinator (Helium Model) with loader, PC, and monitor

Part Numbers - Argon Models	
CHN628ARC	CHN Determinator (Argon Model) with loader, PC, and monitor
CN628ARC	CN Determinator (Argon Model) with loader, PC, and monitor
FP628ARC	N Determinator (Argon Model) with loader, PC, and monitor

**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 sigma instrument blank deviation. Method range may differ due to factors such as sample type and method parameters.*
†Calculated as 1 sigma instrument blank deviation. Method precision may differ due to sample inhomogeneity or other external factors.
††Allow a 6-inch (15 cm) minimum access area around all units.
‡Average output based on nominal operating parameters.
V~ denotes VAC.

Leco®
Delivering the Right Results

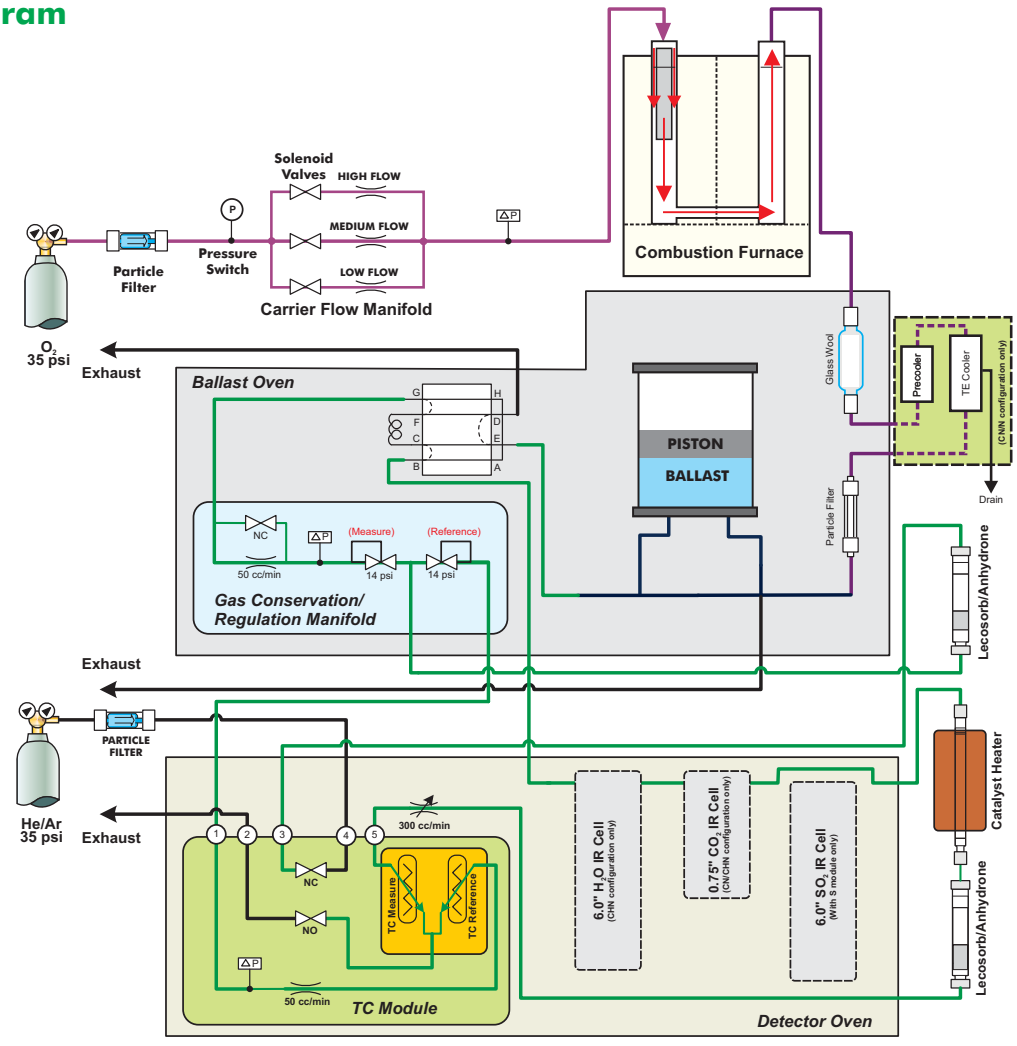
Theory of Operation

The CHN628 Series Elemental Determinator is used to determine nitrogen, carbon/nitrogen, and carbon/hydrogen/nitrogen in organic matrices. The instrument utilizes a combustion technique and provides a result within 4.5 minutes for all the elements being determined. The instrument features custom software operated through an external PC to control the system operation and data management.

A pre-weighed and encapsulated sample is placed in the instrument's loader where the sample will be transferred to the instrument's purge chamber directly above the furnace, eliminating the atmospheric gases from the transfer process. The sample is then introduced to the primary furnace containing only pure oxygen, resulting in a rapid and complete combustion (oxidation) of the sample. Carbon, hydrogen, and nitrogen present in the sample are oxidized to carbon dioxide (CO_2), water (H_2O), and NO_x respectively, and are swept by the oxygen carrier through a secondary furnace for further oxidation and particulate removal. In the FP and CN628 models, the combustion gases pass through a pre-cooler and thermoelectric cooler to remove the water vapor. The combination gases are then collected in a vessel known as a ballast for equilibration. The homogenized gases from the ballast are swept through an aliquot loop and then passed into a carrier gas. Separate optimized non-dispersive infrared (NDIR) cells are utilized for the detection of H_2O and CO_2 ensuring the rapid analysis time of the system. The NO_x gases are passed through a reduction tube filled with copper to reduce the gases to N_2 and remove any excess oxygen present from the combustion process. The aliquot gas then passes through Lecosorb and Anhydrone to remove CO_2 and the water generated during the CO_2 trapping process and onto a thermal conductivity cell (TC) utilized to detect the N_2.

The final results are typically displayed in weight percent or parts-per-million but can be displayed in other custom units or

Flow Diagram



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

LECO Corporation
3000 Lakeview Avenue | St. Joseph, MI 49085 | 800-292-6141 | Phone: 269-985-5496
info@leco.com | www.leco.com | ISO-9001:2008 • HQ-Q-994 | LECO is a registered trademark of LECO Corporation.

Delivering the Right Results

Form No. 209-218-001 9/16-REV6