RC612 Multiphase Carbon and Hydrogen/Moisture Determinator
Specification Sheet

Instrument Range* (250 mg for %; 7.2 in² strip sample for area)

% Carbon:	50 ppm to 20%
Area Carbon:	0.002 to 6.94 mg/in²
% H_2O:	100 ppm to 20%

Precision

Carbon:	25 ppm or 3% RSD of result; whichever is greater
H_2O	50 ppm or 3% RSD of result; whichever is greater

Calibration Standards

Detection Method Solid-state infrared

Sample Size

Powdered:	0.5 grams, nominal
Non-Powdered:	Strip or tubular samples up to 0.9 in. x 4 in. (23 mm x 102 mm)

Chemical Reagents
- Sodium Hydroxide on Inert Base
- Anhydrous Magnesium Perchlorate
- Copper Oxide

Gases (Carrier) Oxygen, 99.5% pure, 40 psi (2.8 bar) ±10%
Nitrogen, 99.5% pure, 40 psi (2.8 bar) ±10%

Gas Flows

Oxygen:	3 lpm when in use
Nitrogen:	3 lpm when in use

Furnace Range Resistance Heated; near-ambient to 1100°C (2012°F)
Programmable setpoints and ramp rates

Environmental Conditions

Operating Temperature:	15°C to 35°C (59°F to 95°F)
Relative Humidity:	20% to 80%, non-condensing

Electrical Power Requirements 230 V~ (±10%; at max load), 50/60 Hz, single phase, 30 A, 23,600 BTU/hr

Physical Dimensions** 33 in. H x 22.5 in. W x 34.5 in. D (84 cm x 57 cm x 87 cm)

Weight (Approximate) 255 lb. (116 kg)

Part Numbers

RC612C	RC612 Determinator with Windows®-based software and external PC
RC612LC	RC612 Determinator with Windows-based software, external PC, and 50-sample Autoloader

Options

620-400-210	Autoloader Add-On Kit
501-291	O_2 Regulator
764-216	Inert Regulator
751-300-100	L-250 Balance
619-995	Bar Code Reader (USB)
625-507	Kit Purifier

V~ denotes VAC.
**Range may be affected by reducing or increasing sample mass; specified range based upon LECO standard materials and methods; range is matrix dependent.*
***Allow a 6-inch (15 cm) minimum access area around all units.*

Theory of Operation

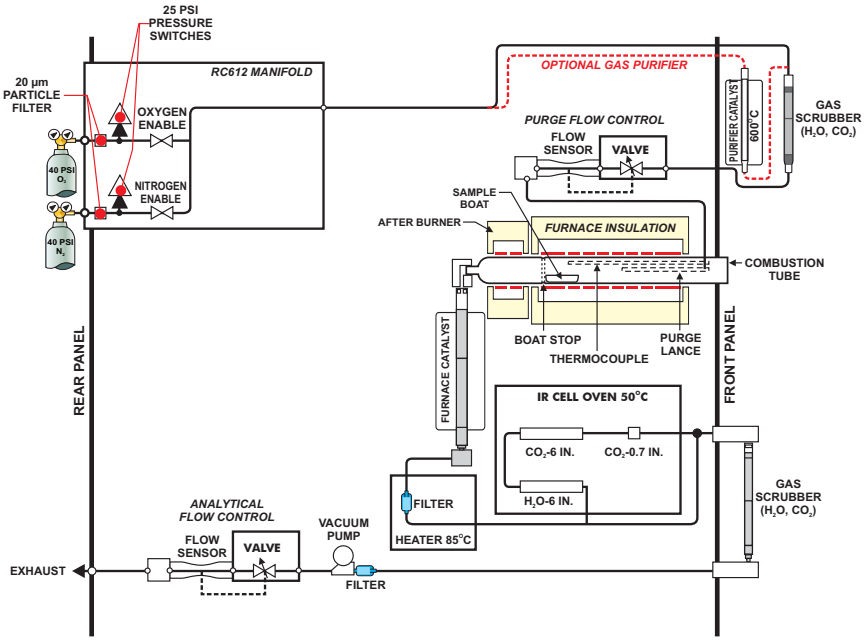
The RC612 multiphase carbon and hydrogen/moisture determinator quantifies the carbon and hydrogen present in various organic and inorganic samples, and identifies the source of several types of carbon content.

The RC612 features a state-of-the-art furnace control system, which allows the temperature of the dual-stage furnace to be programmed from near-ambient to 1100°C .

Depending on the application, multiple furnace steps can be programmed by the operator and the furnace purged with oxygen or nitrogen, creating oxidizing or inert conditions in which the carbon and hydrogen present is combusted or reacted. An afterburner furnace (nominally set to 850°C) and a secondary oxidation catalyst are included in the flow path to ensure full combustion/reaction of all evolved components. Infrared detection is used to quantify the result either as a weight percentage or as a coating weight (mg/in^2).

When combusted in an oxidizing atmosphere (O_2), all forms of carbon (except some carbides such as SiC) are converted to CO_2. In contrast, organic forms of carbon produce both H_2O and CO_2. Thus the presence of organic carbon may be verified by finding coincident peaks in H_2O and CO_2. Moisture and carbonate are detected when the sample is combusted in an inert (N_2) atmosphere, with the furnace catalyst temperatures at 120°C. In this mode, organic carbon is normally not detected. Additional sources of carbon can often be differentiated by the temperature at which they oxidize or volatilize.

A slow ramping temperature program, from 100°C to 1000°C at 20°C per minute, can be used for the analysis of unknown samples. This type of analysis can be used to indicate the temperatures at which the differing forms of carbon are oxidized, thereby enabling the operator to optimize the furnace temperature program to provide more rapid quantitative results for each form of carbon present in this sample type.



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

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Delivering the Right Results

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