

# TGA701 Thermogravimetric Analyzer

## Specification Sheet

<b>Sample Size</b>	5 grams (maximum)
<b>Number of Samples</b>	19 (+1 reference)
<b>Precision</b>	0.02% RSD (1 $\sigma$ , 1 g inert sample)

<b>Balance</b>	
Resolution	0.0001 g

<b>Oven Temperature</b>	Ambient (minimum)
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<b>Temperature Control</b>	
Minimum	100°C
Maximum	1000°C
Accuracy	2% of setpoint, or $\pm 2^\circ\text{C}$ ; whichever is greater
Stability	2% of setpoint, or $\pm 2^\circ\text{C}$ ; whichever is greater

<b>Maximum Ramp Rate</b>	
Ambient to 104°C	15°C/min.
104°C to 1000°C	50°C/min.

<b>Gas Flow Rate</b>	
Low	3.5 lpm
Medium Low	5.0 lpm
Medium	7.0 lpm
Medium High	8.5 lpm
High	10.0 lpm

<b>Gas Pressure</b>	
Air	45 psi (3.1 bar)
Nitrogen	35 psi (2.4 bar)
Oxygen	35 psi (2.4 bar)

**\*Air Ventilation Requirements** 70 to 160 CFM adjustable  
(33 to 75 lps)

**\*Duct Size** 4 inch (100 cm)

*\*Note: The TGA701 must be vented to an external exhaust. For moisture-only applications in which the furnace temperature does not exceed 150°C, and the distance from the right side of the TGA701 to the external exhaust is less than 10 feet (3 meters), a passive connection to a 3-inch (75 cm) duct is acceptable.*

<b>Optional External Blower</b>	
Flow	140 cfm (65 l/s)
Power	115 V~ ( $\pm 10\%$ ), single phase, 60 Hz, 1.6 A 230 V~ ( $\pm 10\%$ ), single phase, 50/60 Hz, 0.6/0.8 A

**Operating Temperature** 15°C to 35°C

**Humidity** 20% to 80%  
non-condensing

<b>Minimum Gas Purity</b>	
Air	99.5%; dry, oil-free
Nitrogen	99.9%
Oxygen	99.5%

<b>Electrical Power Requirements</b>	
TGA701	230V~ ( $\pm 10\%$ ; at max load), 50/60 Hz, single phase, 25 A 19,700 BTU/hr

<b>Dimensions</b>	
Height	20.5 inch (52 cm)
Width	24 inch (61 cm)
Depth	22 inch (56 cm)
Weight	180 lb. (82 kg)

**Total Shipping Weight** 245 lb. (111 kg)

<b>Part Numbers</b>	
TGA701S4C	TGA701 with PC tower, Windows®-based operating software, and flat panel monitor
TGA701D4C	TGA701 Dual Furnace Configuration with PC tower, Windows®-based operating software, and flat panel monitor

V~ denotes VAC.



## Theory of Operation

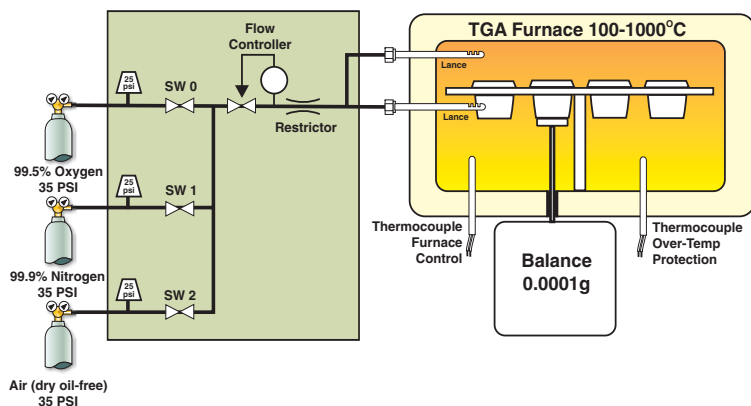
The TGA701 Thermogravimetric Analyzer is used to determine the composition of organic, inorganic, and synthetic materials. It measures weight loss as a function of temperature in a controlled environment. The instrument consists of a computer and a multiple sample furnace that allows up to 19 samples to be analyzed simultaneously.

After an analysis method has been selected, empty crucibles are loaded into the furnace carousel. The analysis method controls the carousel, furnace, and balance operation. On completion of crucible tare, each crucible is presented to the operator for sample loading. The starting sample weight is measured and stored automatically. Once all the crucibles have been loaded, analysis begins. The weight loss of each sample is monitored and the furnace temperature is controlled according to the selected analysis method. The percent weight loss for each sample is reported at the end of each analysis step.

The instrument contains an easy-to-follow menu-driven Windows®-based software program that allows analysis methods to be tailored to satisfy most analytical applications. Temperature, temperature ramp rate, and atmosphere are selectable for each step. Analysis methods can be entered to perform moisture, volatile, ash, or combinations of these three stages. If volatile results tend to be curvilinear, a non-linear regression technique can be used to improve accuracy. Other menus allow on-screen plotting of sample weight loss with hard copy selection after the screen review. Built-in diagnostic functions can be performed via menu selections.

The key to the automated analysis capability is the LECO multiple sample furnace. The 19-position sample carousel and balance pedestal are located in the furnace. One-half to five gram samples are contained in ceramic crucibles. The samples are automatically indexed to the position above the balance pan. The carousel is lowered to place a sample crucible onto the pedestal and the weight is recorded. The cycle continues throughout the entire program. All weighing is performed automatically.

## Flow Diagram



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

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