THERMANSYS®

BOX TYPE FURNACES
High Temperature –High Density SiC resistors – Zirconia Sintering
Model family: **BOX-AS10-1600**

Description.

BOX-AS10-1600 model family designed to give repeatable and reliable results in the most aggressive high temperature processes up to **1550 ˚C continuously**. Utilizing the unique high density Kanthal SiC resistors this furnaces have superior performance in terms or resistance to oxidation and chemical attack, highly extending the workable life of your investment.

All SiC heating resistors will increase in resistance over time at elevated temperatures. Due to the unique nature of the high density Kanthal SiC resistors this effect is severally suppressed. Moreover, **Thermansys PPC** (Power Consistent Control) platform automatically compensate this effect enabling direct power control, instead of conventional control strategies, assuring that the furnace performance will remain unchanged without the need of any operator action or periodical check through the entire life of the equipment.

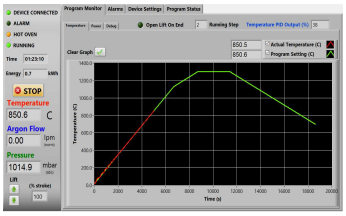
Having as major priority the economical operation this furnace was designed with double wall ceramic insulation serving from one hand as a heat exchanger preheating the incoming air and from the other as a heat barrier improving the overall thermal insulation. Constructed using the highest quality fibrous low mass density thermal insulation leads to important energy savings.

With adjustable air opening in the back side and an exhaust chimney at the top, creating a strong natural convection, the entire volume of the chamber can be refreshed several times per minute. The preheated incoming air is entering and exiting the chamber through multiple holes creating a smooth and temperature uniform laminar air stream through the sample.

Model shown is BOX-AS10-V3.2-1600.

The well recognized absence of chemical interaction between SiC and Zirconia makes this model an ideal choice for a dental laboratory performing Zirconia crowns sintering. Zirconia crowns unafraid treated inside the chamber without the need for covering or providing other protection means.

Taking advantage of the optional addition of up to two flow control systems (calibrated for Nitrogen and Air) the user can prepare flow mixtures with preset concentrations of Oxygen in Nitrogen or work under fully inert (Nitrogen) atmosphere. Equipped with a touch screen computer, running the specially developed **PYROLOGISM 2.0** software, these furnaces present a truly unique and friendly, windows architecture, operator environment with advanced features.



Key features.

- Control strategy based on Thermansys® PCC (Power Consistent Control) platform insures silent operation and compliance with EMC standards.
- PID control constantly conforms to various load needs. Accurate and uniform temperature profiles.
- Modern double wall construction keeps external surfaces temperature low, emphasizing in operator safety. Internal skin is exclusively made from stainless steel to enhance durability.
- Ergonomic design with no protruding edges, bolts or other features combines stainless steel parts with painted finish parts for an improved esthetic result.
- Lift up door keep hot surfaces away from operator.
- Touch Screen Computer running PYROLOGISM 2.0 software human-machine interface.
- 3 user process thermocouple inputs available (B, E, J, K, N, R, S, T type- software configurable).
- Power and true RMS Current measuring circuits.
- Heater failure, open control thermocouple detection, door open alarms and interlocks. Alarms and events front panel led array.
- Alarm event output (dry contact 3A/250V AC/DC).
- Stand alone over-temperature limiter (Watchdog) with manual reset in accordance with EN 60519-2 to protect the oven and load. Overrides main controller and cut off heater power if user adjustable high limit is reached.

Contact details
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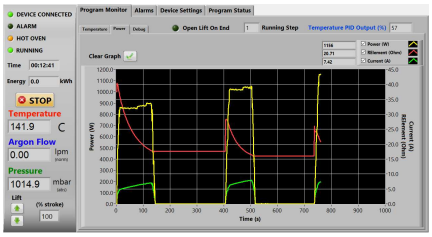
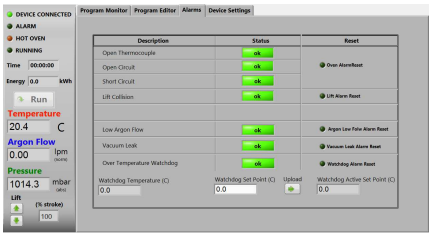
PYROLOGISM control and monitoring software.





- Quick setting of a single ramp rate to a set point -run on timer function.
- Set-point programming with up to 15 ramp and constant temperature programming steps – graphical inspection of programming.
- Storage and reload of unlimited number of distinct programs.
- Real time chart illustrating control temperature, running set point and user process temperatures with dynamic zoom.
- Real time true-RMS Current (A), Voltage (V) and Power (W) measurements.
- Real time actual Power (W) and totalized Energy (kWh) chart.
- Saves all data on local memory.
- Tools for manual PID tuning and auto-tuning or adaptive tuning function.
- Virtual keyboard, alarm and event message tab.
- Watchdog over temperature limiter monitor/configuration.
- Gas flow, monitoring and control interface pages activated if corresponding optional modules are enabled.
- Versions running at Microsoft® Windows are available for control by a PC through USB port.
- Remotely monitoring and control through network connection.

Specifications and Ordering Information.

Standard features:

- Maximum continuous temperature 1550 ˚C.
- Operating Power: 208 /240VAC – 50/60Hz.
- Two in depended B type embedded thermocouples for controller and over-temperature limiter feedback.
- Temperature control accuracy ±1 ˚C.
- Exposed resistors type.
- Thermocouple inputs:
  3 chan. - B, E, J, K, N, R, S, T type- software configurable.
  24 bit A/D conversion, 0-45°C cold junction compensated
  Typical accuracy ±0.2% f.s @ 25 , resolution 0.1 °C

Optional features:

- Flow controllers:
  Number of lines: 1 or 2
  Line 1 gas type calibration: Air
  Line 2 gas type calibration: Nitrogen (N_2)
  Flow range: 0.01-20 std L/min
  Accuracy: ±2% of reading for Air
  ±3% of reading for N_2
  Typical Control stability: ± 0.1 std L/min.
  Temperature (0-50°C), Pressure (0-15 psig) comp.
  Filtration: Not provided, user supplied HEPA grade

CE Certified. Compliant with **Low Voltage Directive 2006/95/EC** (harmonized referenced standard EN 61010-1: 2001 and EN 61010-2-010:2003) and **EMC Directive 2004/108/EC** (harmonized referenced standard EN 61326-1:2006). *Produced in **GREECE** following **ISO 9001:2008 quality management system** and **ISO 14001:2004 environmental management system.***

TABLE1. BOX-AS10-1600 Family Models

Model Part Number BOX-AS10…	Max. Cont. Temp. ˚C x Heat up time* min	Furnace internal dim. WxHxD mm	Heated Volume liters	Furnace external dim. WxH**xD mm	Nominal Max. Power (W)
_V3.2-1600	1600 x 60	120x160x170	3.2	480x720x540	3200
_V3.8-1600	1600 x 60	120x160x200	3.8	480x720x560	3800
_V5-1600	1600 x 60	140x160x220	5.0	520x730x580	5000
_V6.3-1600	1600 x 60	140x180x250	6.3	520x770x620	6400
_V8.3-1600	1600 x 60	160x180x290	8.3	540x770x640	7600

* *Furnace working with no load.*
** *Plus 100 mm for chimney*

IMPORTANT ORDERING NOTES:

- Models Part Number listed in Table 1 concern complete turn key systems without flow controllers included.

Ordering Examples:

- BOX-AS10_V3.2-1600: This Part Number includes one BOX-AS10-1600 family furnace having 120x160x170 mm internal chamber dimensions including all standard features.
- To order the furnace with one flow controller add at the end of the part number the suffix “LINE X”,
  e.g: BOX-AS10_V3.2-1600-**LINE1** for air calibration or BOX-AS10_V3.2-1600_**LINE2** for Nitrogen calibration
- To order the furnace with two flow controllers add at the end of the part number the suffix “LINE 1/2”,
  e.g: BOX-AS10_V3.2-1600-**LINE1/2**.

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