



CONTROLLED ATMOSPHERE FURNACE TT-AF-8-1700

1700°C chamber atmosphere furnace is built with a flange-sealed body for reliable operation. During heat treatment, protective gases such as nitrogen, argon, or oxygen can be introduced for processing carbon, metal, and biomass materials. It is also suitable for sintering ternary lithium battery materials.

APPLICATIONS

- **Ultra-High Temperature Material Processing:** Primary application is the sintering, annealing, and heat treatment of demanding materials, including advanced ceramics, specialty metals, and precursors for ternary lithium-ion batteries, up to a continuous operating temperature of 1620 degrees C.
- **Precise Atmospheric Synthesis:** Creates an ideal, tightly sealed environment for specialized projects requiring precise atmosphere control, including processing materials under inert (N₂, Ar) or reactive (O₂) gas, or under a low vacuum 20,000 Pa.
- **R&D and Laboratory Use:** Perfect for laboratory applications that require high-temperature stability and no margin for error, helping achieve consistent and reliable experimental results.
- **Complex Thermal Profiling:** Supports sophisticated material research by allowing the programming of up to 15 programs with 30 segments each (total 450 segments) for multi-stage temperature ramps and holds.

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FEATURES

- **1700°C Max Temperature:** Achieves significantly higher working temperatures 1620°C than standard models, enabled by top-brand MoSi2 heating elements.
- **Advanced Control and Logging:** Features a 7-inch LCD Touch Screen with a PID controller $\pm 1^{\circ}\text{C}$ and a USB port for recording and exporting the heating curve data in Excel format.
- **Superior Thermal Efficiency:** Built with high-quality alumina polycrystalline fiber using advanced Japanese vac-sorb forming technology, ensuring excellent insulation and significantly reduced energy consumption.
- **Safety and Durability:** Includes a double-shell construction to keep the outer case cool, a water-cooled furnace door to ensure safe operation, and multiple safety precautions (overheating alarm, leakage breaker).
- **Integrated Design:** The furnace body and control cabinet are integrated into a single, compact unit, simplifying setup and operation in laboratory environments.

TECHNICAL SPECIFICATIONS

Model Name	Controlled Atmosphere Muffle Furnace
Model No.	TT-AF-8-1700
Chamber Size	W 200 x D 200 x H 200mm □ 8 liters □

Usage	The atmosphere furnace creates an ideal environment for a wide range of laboratory applications, delivering precise temperature and atmosphere control for specialized projects. A vacuum or controlled atmosphere is essential for processes that demand exact temperatures with no margin for error. With its tightly sealed design, the furnace ensures a stable environment, helping achieve consistent and reliable results.
Type	Atmosphere type, front loading
Furnace Structure	1. The furnace is primarily composed of a steel shell, heating chamber, gas system, cooling unit, and temperature control system. 2. The chamber includes chamber lining, insulation materials, and heating elements. 3. The temperature controller features a 30-segment programmable PID controller, control components, and a thermocouple. The furnace body and controller are integrated into a single unit, with the furnace securely mounted on the temperature controller.
Max. Temperature	1700°C
Continuous Operating Temp.	1620°C
Voltage/Power	AC220V/5KW (110V is also available) 50/60Hz/Single phases
Heating Element	Top brand MoSi2 Rod as heater with at least 4 pcs installed , which has the feature of anti-corrosion and resistance with strong exhaust materials 2. The heating elements are placed in left and right two sides for heating
Heating Rate	1~10°C/min freely adjustable, suggest 6-8C/min for longer life using of furnace
Temperature uniformity	+/- 5C (without loading in effective working area), hold temperature at 800c in 2 hours
Chamber Material	1. The furnace chamber is built with high-quality alumina polycrystalline fiber, produced using advanced Japanese vac-sorb forming technology. This material offers excellent insulation, durability, and high tensile strength, with no loose particles. As a result, the furnace is significantly more energy-efficient compared to chambers made with standard fiber materials. 2. Premium 1500-grade alumina fiber is used as the refractory lining, providing strength and a clean white appearance. 3. The chamber surface is finished with a baked-on, high-temperature resistant and heat-reflective coating, helping reduce corrosion and extend service life.

Thermocouple	B type Temperature tested from its backwall center of the chamber
Temperature Controller (LCD Touch Screen)	1. Independent Control cabinet, Defined application within the constraints of the operating instructions 2. 7 inch digital LCD Touch Screen controller It with 15 programs and each 30 segmnets totally 450 segments 3. Simultaneous LCD display of actual temperature VS set point 4. PID automatic control and auto-tune function 5. +/- 1 °C temperature accuracy 1. Germany SEMIKRON thyristor controller thyristor phase-shift voltage control, PID parameter self-tuning function, over-temperature alarm and open circuit alarm function. The temperature control has functions such as automatic temperature rise, automatic heat preservation, and automatic shutdown, which can meet the requirements of continuous constant temperature and temperature control.
Data Log Function	The heating curve can be recorded and exported with USB port installed with excel form
Electronic Component	High grade electric parts air switch, A.C contactor, Power Regulator with Germany Semikron SCR etc.
High Quality Transformer	The transformer is a Spanish joint-venture pure copper autotransformer. Its input and output specifications are as follows: the temperature controller provides a PID output signal of 4–20 mA, which is received by the SCR thyristor for regulation based on the controller's instructions. The transformer then adjusts the current and voltage to deliver a matching output, supplying power to the silicon molybdenum rod heating element for heating.
Furnace Shell	1. High quality cold-rolled steel sheets CNC processing 2. Environmental electrostatic plastic-spraying on surface after deoiling, derusting, phosphating etc. 3. Engineered with safety in mind, the furnace has a double shell construction to keep the outer case cool. 4. The double shell will not be deformed for long-term use,
Vacuum Pump request	Pump Speed : 4L/S ,0.55KW , 220V ,50HZ

Water Chiller Request	2P , flow rate : 1m³/h Power : 2.18KW ,220V, 50HZ ,1/2 Pipe connectors
Furnace door	1.Double doors design, Door opens sideways, Manual type 2.Inner furnace door with high temperature insulating function and outer door with high temperature silicon gasket sealed to get vacuum condition 3 .Furnace door is with water cooling structure to avoid high temp and enusre safety
Inlet and Outlet Ports	1. The gas inlet and outlet ports are designed on the side of the furnace body and can be supplied with inert protective gas. The gas flow rate is controlled by a float flowmeter with a range of 60-600ml/min or 1-1Ll/min
Gas type	Gases such as Nitrogen, Argon, O2 , F etc.
Sealing performance	High temperature PTFE gasket is installed on the furnace door to ensure the reliable sealing of the furnace; the furnace body is equipped with an air inlet, which can extract vacuum;
Vacuum degree	Ultimate vacuum level for TT-AF furnaces is around 20000Pa with hose barb connections. Please keep in mind that our TT-AF series of atmosphere furnaces are NOT designed to be vacuum furnaces, the vacuuming part is mainly for users to pre-vacuum the chamber, before putting in inert or other protective gases.
	If customer require higher level sealing performance with high vacuum, please order the vacuum furnace series
Gas Pressure	Max gas pressure for standard atmosphere furnace is 0.02Mpa If higher gas pressure required, please order our professional atmosphere furnace, Max 0.3Mpa
Certification	
Safety Precautions	1. Overheating & Broken thermocouple protection. 2. Leakage circuit breaker 3. Over-temperature protection and alarm allow for operation without attendant(s). 4. Microprocessor-based PID control with self-tuning capability to prevent overshooting of set temperature 5. Built-in ammeter and dual voltmeters for easy monitoring and troubleshooting.

Warranty	1. One-year limited manufacturer's warranty (Consumable parts such as ceramic crucible, thermocouple and heating elements are not covered by the warranty, please order replacements at related products respectively)
Site Installation Conditions	1. Power supply: Random standard 5-meter power supply line (if the distance between the cabinet and the equipment is more than 5 meters, the power supply line needs to be purchased from the manufacturer by itself or separately), three-phase 380V, 50HZ, the user must reliably ground the equipment. 2. Environment: The temperature of the equipment is 0-45°C . 3. Ground: The ground is flat and has good load-bearing capacity; there is no debris piled up in 1000 mm around the equipment.
Optional Accessories	Mass Flowmeter Gas Float Meter Vacuum Pump Thermocouple Exhaust System Crucibles
Warnings	1. Toxic or explosive gases generated by the heated products may do a harmful to the inside chamber 2. Small cracks may appear on the surface in daily using



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