



200MM SINGLE ZONE LARGE DIAMETER TUBE FURNACE - TT-LDTF- 200-1200

200MM Single Zone Large Diameter Tube Furnace – TT-LDTF-200-1200 features an extended constant-temperature zone and precise temperature control, making it ideal for sintering multiple samples or conducting pilot-scale experiments. Commonly used in semiconductor research, nanomaterials, carbon fiber, and graphene applications, it offers a reliable and budget-friendly solution for advanced thermal processing.

APPLICATIONS

- **Semiconductor Research** – Provides precise thermal processing for wafers, substrates, and electronic materials. Supports uniform heating required for annealing, doping, and material synthesis.
- **Nanomaterials & Graphene Processing** – Enables controlled sintering, crystallization, and thermal treatment of nanomaterials, carbon fibers, and graphene. Supports pilot-scale and batch experiments with high thermal uniformity.
- **Lithium Battery Materials** – Ideal for heat treatment of cathode, anode, and electrolyte materials. Maintains consistent temperature profiles for reproducible material performance and electrochemical properties.
- **Advanced Materials & New Energy** – Facilitates processing of ceramics, composites, and other high-performance materials. Supports R&D and industrial applications in energy storage, advanced composites, and emerging materials sectors.
- **CVD & Controlled Atmosphere Applications** – Compatible with vacuum or inert gas environments. Supports chemical vapor deposition and gradient thermal experiments, enabling versatile thermal processing.

- **Pilot-Scale Thermal Experiments** – Extended constant-temperature zones and independently controlled heating zones allow for sintering multiple samples, batch heat treatment, and thermal gradient studies. Suitable for research labs and industrial pilot operations.
- **Energy-Efficient Heating System** – Features HRE high-temperature alloy resistance wires and durable metal/ceramic heating elements. Side or ring-type heating ensures uniform temperature distribution and energy-efficient performance.
- **Precision Temperature Control** – Equipped with PID microcomputer control, SSR/SCR voltage regulation, and N-type thermocouple feedback. Supports up to 30 programmable segments with automatic over-temperature and fault protection.
- **Durable Furnace Shell & Refractory** – Constructed from Q235 low-carbon steel with electrostatic and corrosion-resistant coating. Multi-layer insulation reduces heat loss and energy consumption, while the horizontal top-opening design ensures easy operation.
- **Customizable & Optional Accessories** – Compatible with quartz, metal, or alumina tubes. Optional vacuum pumps, digital vacuum gauges, float flowmeters, and loading containers allow adaptation to specific experimental or production requirements. OEM customization is available to meet special material processing needs.

FEATURES

The large-diameter tube furnace features a heating system, temperature control unit, working tube, sealing components, and an automated top-opening lid. It supports both vacuum and controlled atmosphere conditions, making it suitable for a wide range of CVD applications. Multiple heating zones can be configured to provide a highly uniform temperature field or to

conduct thermal gradient experiments on materials. This furnace is often used for pilot-scale sintering and batch heat treatment of graphene materials, lithium battery electrode materials, semiconductors, and advanced materials in the new energy sector.

Furnace Shell

- Constructed from Q235 low-carbon steel with a corrosion-resistant, electrostatically coated surface
- Double-layer metal frame with insulated fan structure ensures low external temperature
- Horizontal orientation with top-opening design for easy access

Refractory Insulation

- Multi-layer thermal insulation using lightweight alumina ceramic fiber and premium backing board
- Asbestos-free construction
- Designed for minimal heat loss and reduced energy usage

Heating System

- Durable metal and ceramic heating elements provide efficient, radiation-based heat transfer
- Side or ring-type heating delivers excellent temperature consistency
- Three-zone heating system, with each zone independently controlled for improved uniformity and flexibility

Temperature Control Panel

- Features PID control with SSR/SCR output for precise regulation
- Uses an international-grade thermocouple for accuracy and durability
- Includes heat indicator and over-temperature alarm for enhanced safety

Programmable Controller

- Advanced controller handles complex heating sequences
- User-friendly interface with flexible programming

- Supports up to 30 program segments
- Integrated over-temperature protection and system fault alarms

Vacuum & Atmosphere Compatibility

- Equipped with a 304 stainless steel sealing flange to support vacuum or controlled gas environments
- Compatible with high-purity quartz, metal, or alumina working tubes for different processing needs

TECHNICAL SPECIFICATIONS

Model	TT-LDTF-150-1200	TT-LDTF-200-1200	TT-LDTF-280-1200	TT-LDTF-350-1200
Furnace tube size	Φ150×1500mm	Φ200×1500mm	Φ280×1500mm	Φ350×1500mm
Heating zone	900mm	900mm	900mm	900mm
Max temperature	1200°C			
Working temperature	1100°C			
Heating element	HRE high temperature alloy resistance wire			
Chamber material	Polycrystalline inorganic alumina ceramic fiber material prepared by wet vacuum filtration			
Temperature control accuracy	±1°C			
Temperature measuring element	N-type thermocouple			
Temperature control instrument	Intelligent microcomputer PID temperature control instrument, SSR voltage regulation control, PID parameter self-tuning function; programmable 30 program segments, program temperature rise, program heat preservation, program cooling; three-stage partition control			
Heating rate	1-20°C/min free adjustment			

Furnace structure	Furnace temperature control integrated structure
Standard configuration	Modular control, it will send out sound and light alarm signal for over temperature and broken coupler in the working process, and automatically complete the protection action
Safety protection	The equipment is equipped with a circuit breaker, which will automatically pop open in case of short circuit leakage, which can protect the safety of equipment and operators
Furnace shell	The shell is processed by high-quality cold-rolled steel sheet CNC machine tools, after welding, grinding, polishing, phosphating, pickling, and electrostatic spraying of plastic powder on the surface
Quality certification	ISO9001 CE SGS TUV
Standard configuration	1 furnace body 2. Power cord 3 meters 3. 1 piece thermocouple 4. 1 piece manual 5. 1 piece furnace hook 6. One pair of high temperature gloves
Optional	1. Optional rotary vane vacuum pump (vacuum degree $\leq 5\text{pa}$) 2. Optional diffusion pump vacuum unit (vacuum degree $\leq 6.67 \times 10^{-2}\text{pa}$) 3. Optional molecular pump vacuum unit (vacuum degree $\leq 6.67 \times 10^{-4}\text{pa}$) 4. Optional digital vacuum gauge (1.0×10^5 - $1.0 \times 10^{-1}\text{pa}$) 5. Optional float flowmeter (range 100-1000ml/min) 6. Optional quartz boat, metal crucible and other material loading containers
OEM	According to the output requirements of the actual material of the user, the customization of special specifications of the product can be realized



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