



TORONTECH



180MM LARGE DIAMETER TUBE FURNACE - TT-LDTF- 180-1200

The 180MM Large Diameter Tube Furnace – TT-LDTF-180-1200 is designed with a wide quartz tube, an extended constant-temperature zone, and precise temperature control, making it ideal for sintering multiple samples or performing pilot-scale experiments. Its reliable thermal management ensures uniform heating and consistent results across a variety of materials.

Commonly used in semiconductor research, nanomaterials, carbon fiber, and graphene processing, this furnace offers a cost-effective and robust solution for advanced thermal processing. It features a $\Phi 180 \times 1500$ mm quartz reactor tube with a 900 mm heating zone, capable of continuous operation at 1100°C and reaching a maximum temperature of 1200°C. Heating is provided by 1500-type polycrystalline alumina ceramic fiber elements, and temperature is monitored using an N-type thermocouple. The system operates on 380V/12 kW, delivering efficient and stable performance for laboratory and pilot-scale applications.

APPLICATIONS

- **Semiconductor Research** – Provides uniform high-temperature sintering for semiconductor wafers and materials. Supports vacuum and controlled-atmosphere processing, enabling precise thermal treatment for electronic and optoelectronic device development.
- **Nanomaterials & Advanced Composites** – Ideal for synthesizing and heat-treating nanomaterials, carbon fibers, and graphene. Extended constant-temperature zones and multi-zone configurations allow for uniform thermal distribution and gradient experiments for material optimization.
- **Lithium Battery & Energy Materials** – Supports pilot-scale sintering and batch heat treatment for lithium-ion battery electrodes and other energy materials. Ensures accurate temperature control and reproducible results for research and development.

- **Material Development & Pilot-Scale Testing** – Capable of handling multiple samples simultaneously, providing a cost-effective solution for R&D laboratories and pilot-scale production. Offers flexible heating zones for advanced thermal processing and experimentation.
- **Vacuum & Atmosphere Processing** – Compatible with vacuum or inert gas environments, with a 304 stainless steel sealing flange and options for quartz, metal, or alumina work tubes. Ideal for CVD processes and other sensitive high-temperature applications.
- **Industrial & Research Applications** – Delivers reliable, energy-efficient, and precise thermal processing for a variety of materials, including semiconductors, graphene, carbon fiber, and nanomaterials. Supports a wide range of advanced materials research, batch production, and pilot-scale studies.

FEATURES

The large-diameter tube furnace is equipped with a heating system, temperature control unit, working tube, sealing kit, and an automatic lid-opening mechanism. It supports both vacuum and protected-atmosphere operation, making it suitable for a range of CVD processes. Multiple temperature zones can be configured to create highly uniform thermal conditions or apply temperature gradients for material testing.

This model is widely used for pilot-scale sintering and batch heat treatment in graphene, lithium battery electrodes, semiconductor materials, and applications within the new energy and advanced materials sectors.

Furnace Shell

- Constructed from Q235 low-carbon steel with an electrostatic corrosion-resistant finish
- Double-layer metal frame combined with a heat-insulating fan system keeps surface temperatures low

- Horizontal operation with an upper-opening lid for ease of use

Refractory Insulation

- Multi-layer thermal insulation, including lightweight alumina ceramic fiber and high-quality insulation boards
- Asbestos-free composition
- Low heat loss and reduced energy consumption

Heating System

- Durable metal and ceramic heating elements provide efficient radiant heating
- Side or ring heating configurations for improved temperature uniformity
- Three-zone heating system with independently controlled temperature zones

Temperature Control Panel

- PID control with SSR/SCR output ensures accurate temperature regulation
- High-quality thermocouple with long service life
- Includes a heating indicator and over-temperature alarm

Programmable Controller

- User-friendly interface with flexible programming
- Supports up to 30 programmable segments
- Safety features include over-temperature and fault alarms

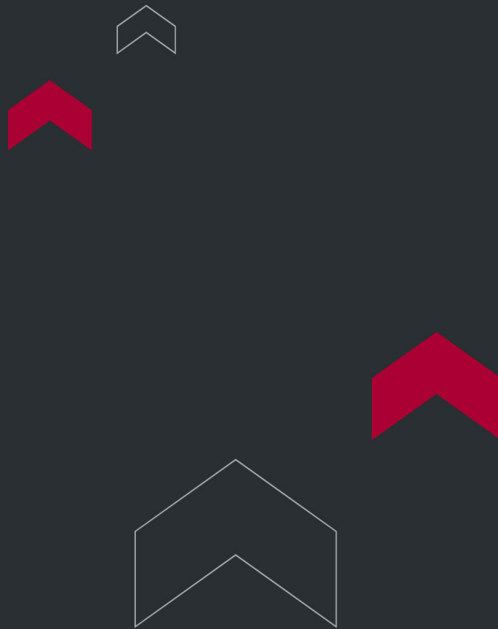
Vacuum & Atmosphere Control

- 304 stainless steel sealing flanges allow operation under vacuum or controlled atmospheres
- Compatible with quartz, metal, or alumina tubes depending on the application

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℃			
Working temperature	1100℃			
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℃			
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℃/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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