



3-ZONE TUBE FURNACE 1200°C - TT-TF3Z-180- 1200

The 3-Zone Tube Furnace 1200°C - TT-TF3Z-180-1200 is engineered for sintering and high-temperature heat treatment of metals, ceramics, nanomaterials, semiconductors, powder metallurgy, and other advanced materials. Widely used in universities, research institutions, manufacturing facilities, and industries such as petrochemical and aerospace, this furnace provides precise and uniform heating for advanced material processing. It features a high-purity quartz tube with an outer diameter of $\Phi 180$ mm and three independently controlled heating zones, each 300 mm in length, allowing continuous operation at 1100 °C and a maximum temperature of 1200 °C.

Powered by 380 V/7.8 kW, the furnace incorporates 1500-type polycrystalline alumina ceramic fiber heating elements with an N-type thermocouple, ensuring accurate temperature control and uniform heat distribution. Its robust design includes a corrosion-resistant Q235 low-carbon steel shell, a durable double-layer frame, and a multi-layer insulation system that minimizes heat loss while improving energy efficiency. The TT-TF3Z-180-1200 is ideal for laboratories and industrial applications requiring consistent high-temperature performance.

APPLICATIONS

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- **Advanced Ceramic Materials** – Enables high-temperature sintering and densification of ceramics, ensuring structural integrity, thermal resistance, and mechanical strength for both research and industrial applications.
- **Nanomaterials Research** – Provides precise, uniform thermal treatment for nanostructures and advanced composites. Supports R&D in functional nanomaterials used in electronics, catalysis, and energy storage.
- **Semiconductor Processing** – Facilitates annealing, diffusion, and oxidation of semiconductor substrates at ultra-high temperatures. Ensures accurate temperature control critical for microelectronics and optoelectronics development.
- **Powder Metallurgy** – Supports high-temperature sintering of metal powders into dense, uniform components. Ideal for manufacturing complex shapes and advanced alloys in research and production environments.
- **Petrochemical & Chemical Applications** – Suitable for catalyst activation, thermal decomposition, and reaction mechanism studies requiring temperatures up to 1700°C. Delivers accurate, reproducible results for chemical R&D.
- **Aerospace Materials Engineering** – Enables testing and processing of high-performance alloys, ceramics, and composites used in aerospace applications. Provides thermal stability and strength validation under extreme conditions.
- **Energy & Battery Research** – Offers thermal treatment for solid-state electrolytes, lithium-ion battery materials, and next-generation energy storage systems. Ensures high-temperature stability and reproducibility in energy materials research.
- **Universities & Research Institutes** – Ideal for advanced studies in physics, chemistry, materials science, and engineering. Provides versatile programming, reliable performance, and robust safety for academic laboratories.

- **Industrial Quality Control & Certification** – Delivers ultra-high temperature testing for product validation, compliance verification, and certification. Compatible with ISO, CE, SGS, and TÜV standards for regulated industries.

FEATURES

Furnace Shell

- The shell is constructed from Q235 low-carbon steel with an electrostatically applied, corrosion-resistant finish.
- A sturdy double-layer metal frame is integrated with a heat-insulating fan structure, keeping the exterior surface temperature low.
- Designed for horizontal operation with a top-opening structure for easy access.

Refractory Material

- The furnace features a multi-layer insulation system composed of lightweight alumina ceramic fiber and high-performance insulation board.
- It is asbestos-free, minimizes heat loss, and reduces energy consumption.

Heating System

- Equipped with high-grade metal and ceramic heating elements that deliver radiant heat throughout the chamber, providing energy efficiency and a long service life.
- The elements are arranged in a circular or dual-sided configuration to ensure excellent temperature uniformity.
- Three independent heating zones allow individual temperature control, enhancing precision and consistency.

Temperature Control Panel

- Utilizes PID technology with SSR/SCR control for accurate temperature regulation.

- Includes an international-grade thermocouple with extended durability.
- Features a heating status indicator and an over-temperature alarm buzzer for enhanced safety.

Program Controller

- Advanced controller designed to support complex heating cycles.
- Intuitive interface with flexible programming options.
- Supports up to 32 programmable segments.
- Includes over-temperature and fault alarms for automatic safety shutdown.

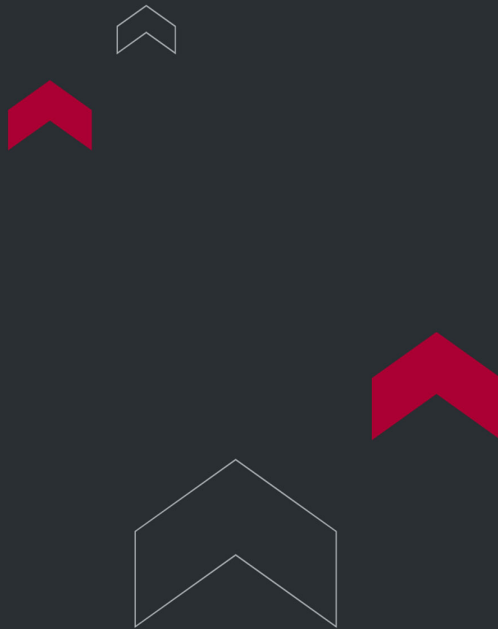
Vacuum Atmosphere Capability

- Fitted with a 304 stainless steel sealing flange, allowing for vacuum or controlled atmosphere operation inside the tube.
- Compatible with quartz glass, metal, or alumina tubes to suit various processing needs.

TECHNICAL SPECIFICATIONS

Model Item	Heating Zone mm	Tube Size (mm)	Max Temperature	Work Temperature	Voltage	Power	Heating Element	Temperature Accuracy
TT-TF3Z-40-1200	300+300+300	Φ40×1500	1200℃	1100℃	220V (110V is also available)	5.4KW	HRE	±1℃
TT-TF3Z-60-1200	300+300+300	Φ60×1500	1200℃	1100℃	380V	7.8KW	HRE	±1℃
TT-TF3Z-80-1200	300+300+300	Φ80×1500	1200℃	1100℃	380V	7.8KW	HRE	±1℃
TT-TF3Z-100-1200	300+300+300	Φ100×1500	1200℃	1100℃	380V	7.8KW	HRE	±1℃

TT-TF3Z-40-1400	200+200+200	Φ40×1200	1400℃	1350℃	220V (110V is also available)	5KW	SiC	±1℃
TT-TF3Z-60-1400	200+200+200	Φ60×1200	1400℃	1350℃	380V	8KW	SiC	±1℃
TT-TF3Z-80-1400	200+200+200	Φ80×1200	1400℃	1350℃	380V	9KW	SiC	±1℃
TT-TF3Z-100-1400	200+200+200	Φ100×1200	1400℃	1350℃	380V	12KW	SiC	±1℃
TT-TF3Z-40-1700	200+200+200	Φ40×1200	1700℃	1600℃	380V	6KW	MoSi2	±1℃
TT-TF3Z-60-1700	200+200+200	Φ60×1200	1700℃	1600℃	380V	9KW	MoSi2	±1℃
TT-TF3Z-80-1700	200+200+200	Φ80×1200	1700℃	1600℃	380V	12KW	MoSi2	±1℃
TT-TF3Z-100-1700	200+200+200	Φ100×1200	1700℃	1600℃	380V	12KW	MoSi2	±1℃



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