

3-ZONE TUBE FURNACE 1700°C - TT-TF3Z-80- 1700



3-Zone Tube Furnace 1700°C – TT-TF3Z-80-1700 is engineered for sintering and high-temperature heat treatment of metals, ceramics, nanomaterials, semiconductors, and powder metallurgy. Widely used in universities, research institutes, manufacturing facilities, and industries such as petrochemical and aerospace, this furnace features a high-purity quartz tube with an outer diameter of $\Phi 130$ mm and three independently controlled heating zones, each 300 mm in length. It supports continuous operation at 1100 °C with a maximum temperature of 1700 °C, powered by 380 V/50 Hz. The heating system utilizes 1500-type polycrystalline alumina ceramic fiber elements with an N-type thermocouple to deliver precise temperature control and uniform heating for advanced material processing.

Constructed from Q235 low-carbon steel, the furnace shell is corrosion-resistant and electrostatically coated, with a durable double-layer frame integrated with a heat-insulating fan system to maintain a low external temperature. The multi-layer insulation system, made of lightweight alumina ceramic fiber and premium insulation boards, is asbestos-free and minimizes energy loss. High-quality metal and ceramic heating elements arranged in ring or dual-side configurations ensure uniform temperature distribution, while three independent heating zones provide precise thermal management. The PID-controlled temperature panel with SSR/SCR output, program controller supporting up to 30 segments, heating indicators, and over-temperature alarms ensures safe, flexible, and reliable operation. A 304 stainless steel sealing flange allows vacuum or controlled atmosphere operation, compatible with quartz, metal, or alumina tubes for versatile applications.

APPLICATIONS

3-Zone Tube Furnace 1200°C – TT-TF3Z-130-1200

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

- **Universities & Research Institutes** – Perfect for advanced studies in physics, chemistry, materials science, and engineering, offering flexible programming, reliable performance, and robust safety for academic labs.
- **Industrial Quality Control & Certification** – Delivers ultra-high-temperature testing for product validation, compliance verification, and certification, conforming with ISO, CE, SGS, and TÜV standards for regulated industries.

FEATURES

Furnace Shell

- Constructed from Q235 low-carbon steel, the furnace shell features a corrosion-resistant, electrostatically coated surface. Its durable double-layer metal frame integrates a heat-insulating fan system, helping maintain a low external temperature. The horizontal layout with a top-opening design ensures convenient operation.

Refractory Material

- The multi-layer insulation consists of lightweight alumina ceramic fiber and a high-quality insulation board backing. It is asbestos-free, minimizes heat loss, and promotes energy efficiency.

Heating System

- Equipped with high-performance metal and ceramic heating elements, the system delivers radiant heat within the chamber for optimal efficiency and long service life. The elements are arranged in a ring or dual-side configuration to ensure uniform temperature distribution.
- The furnace includes three independently controlled heating zones, offering improved temperature consistency across the entire chamber.

Temperature Control Panel

- Features PID control with SSR/SCR components for accurate temperature regulation. Includes an international-standard thermocouple for durability, a heating status indicator, and an over-temperature alarm buzzer for safety.

Program Controller

- User-friendly and capable of handling complex thermal processes. Supports flexible programming with up to 30 customizable segments. Includes automatic safety shutoff, over-temperature alerts, and fault detection for reliable operation.

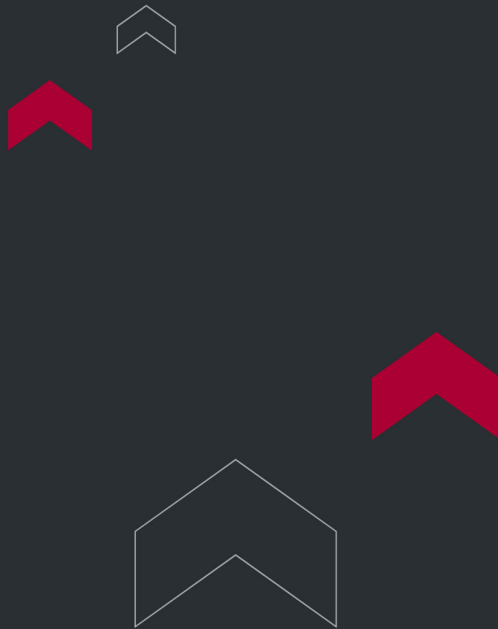
Vacuum and Atmosphere Capability

- Fitted with a 304 stainless steel sealing flange to allow for vacuum or controlled atmosphere operation. The system is compatible with quartz, metal, or alumina tubes—offering adaptability for a variety of applications and working environments.

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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