



# **SINGLE ZONE NON- SPLIT TUBE FURNACE 1700°C - TT-TF1Z-100- 1700**

Single Zone Non-Split Tube Furnace 1700°C - TT-TF1Z-100-1700 is designed for high-temperature heat treatment and sintering of metals, ceramics, nanomaterials, semiconductors, powder metallurgy, and other advanced materials. It is widely used in universities, research institutions, manufacturing facilities, and industries such as petrochemical and aerospace.

## APPLICATIONS

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- **Advanced Ceramic Materials** – Provides ultra-high temperature sintering and densification of ceramics under controlled vacuum or protective atmospheres. Ensures superior mechanical strength, thermal resistance, and microstructural stability for research and industrial applications.
- **Nanomaterials & Functional Composites** – Enables precise and uniform heat treatment of nanostructures, coatings, and advanced composite materials. Supports breakthroughs in catalysis, energy storage, and functional electronic materials.

- **Semiconductor & Electronics Development** – Facilitates annealing, diffusion, oxidation, and other thermal processes in semiconductor wafers and substrates. Delivers accurate, reproducible heating critical for microelectronics and optoelectronics manufacturing.
- **Powder Metallurgy & Advanced Alloys** – Supports sintering, densification, and phase transformation of metal and alloy powders. Widely used for high-performance alloy development, metallurgical research, and component manufacturing.
- **Petrochemical & Chemical Laboratories** – Suitable for catalyst activation, decomposition studies, and high-temperature reaction experiments requiring precise control in vacuum or protective gas atmospheres. Provides accurate and consistent data for chemical R&D.
- **Aerospace Materials Engineering** – Enables thermal testing and treatment of high-performance alloys, ceramics, and composites used in aerospace applications. Ensures reliability, thermal stability, and strength validation under extreme service conditions.
- **Energy & Battery Research** – Provides high-temperature processing of cathode/anode materials, solid electrolytes, and fuel cell components. Enhances stability and performance of lithium-ion, solid-state, and next-generation energy storage systems.
- **Universities & Research Institutes** – Ideal for advanced studies in physics, chemistry, materials science, and engineering. Combines ease of operation, programmable precision, and robust safety features to support cutting-edge academic research.
- **Industrial Quality Control & Certification** – Delivers precise high-temperature testing for product validation, process certification, and compliance verification. Conforms with ISO9001, CE, SGS, and TÜV standards for regulated

industries.

## FEATURES

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### Furnace Shell

- Constructed from Q235 low-carbon steel, the shell features an electrostatically resistant and corrosion-resistant surface. A solid double-layer metal frame is integrated with a heat-insulating fan structure to ensure a low external surface temperature. Designed for horizontal operation, the unit is user-friendly and easy to handle.

### Refractory Material

- The multi-layer insulation system consists of lightweight alumina ceramic fiber and a premium-grade insulation board backing. It is free from asbestos, minimizes heat loss, and ensures low energy consumption.

### Heating System

- High-performance MoSi<sub>2</sub> heating elements are securely mounted on both sides of the chamber, providing efficient and energy-saving radiant heat. This dual-sided configuration ensures excellent temperature uniformity and contributes to an extended service life.

### Temperature Control Panel

- Features precise temperature regulation through PID and SSR control. It uses a B-type Ni-Cr-silicon thermocouple with a wide temperature range of 0–1800°C and long operational life. The panel includes a heating status indicator and an over-temperature alarm with a buzzer for added safety.

### Program Controller

- Equipped with an advanced programmable controller that accommodates complex thermal processes. Offers straightforward operation and flexible programming with up to 30 segments. Safety features include automatic protection, fault detection, and over-temperature alarms.

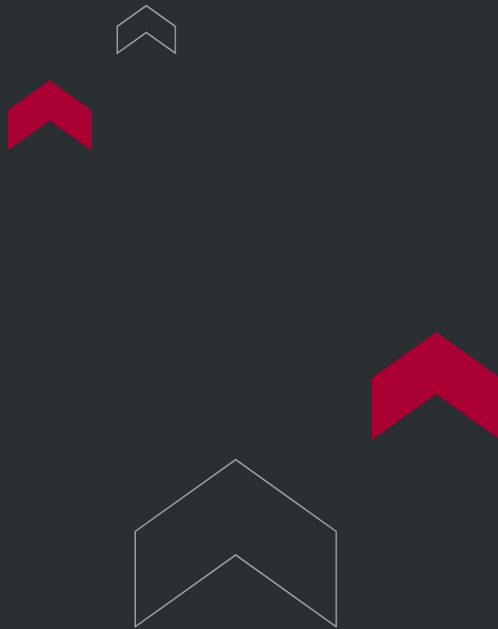
**Vacuum and Atmosphere Capability**

- Includes a 304 stainless steel sealing flange to enable vacuum or controlled atmosphere conditions inside the furnace tube. Comes with a high-quality quartz glass tube, with optional metal or corundum tubes available to suit a variety of working environments

**TECHNICAL SPECIFICATIONS**

|                              |                                                                                            |                                   |                                   |                                   |
|------------------------------|--------------------------------------------------------------------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| Model                        | TT-TF1Z-40-1700                                                                            | TT-TF1Z-60-1700                   | TT-TF1Z-80-1700                   | TT-TF1Z-100-1700                  |
| Tube size                    | Φ40 x 900mm                                                                                | Φ60 x 900mm                       | Φ80 x 900mm                       | Φ100 x 900mm                      |
| Max Temperature              | 1700°C                                                                                     |                                   |                                   |                                   |
| Working temperature          | 1600°C                                                                                     |                                   |                                   |                                   |
| Heating zone size            | 300mm                                                                                      |                                   |                                   |                                   |
| Voltage                      | 220V/3KW (110V is also available)                                                          | 220V/4KW (110V is also available) | 220V/5KW (110V is also available) | 220V/5KW (110V is also available) |
| Heating element              | MoSi2                                                                                      |                                   |                                   |                                   |
| Furnace material             | Polycrystalline inorganic alumina ceramic fiber material prepared by wet vacuum filtration |                                   |                                   |                                   |
| Furnace tube material        | High purity corundum tube                                                                  |                                   |                                   |                                   |
| Temperature control accuracy | ±1°C                                                                                       |                                   |                                   |                                   |

|                                |                                                                                                                                                                                                                                                                |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Temperature measuring element  | B-type national standard platinum rhodium thermocouple                                                                                                                                                                                                         |
| Temperature control instrument | Intelligent microcomputer PID temperature control instrument, SSR control, PID parameter self-tuning function; programmable 4 groups of 8 program segments, program temperature rise, program heat preservation, program cooling                               |
| Heating rate                   | 1-15°C/min free adjustment                                                                                                                                                                                                                                     |
| Furnace structure              | Furnace temperature control integrated structure; double-layer shell, air circulation and heat insulation                                                                                                                                                      |
| Sealing performance            | Both ends of the furnace tube are equipped with stainless steel metal flanges, matched with high-temperature PTFE gaskets, which can work under vacuum with a vacuum degree of $\leq 5\text{pa}$ (rotary vane vacuum pump)                                     |
| atmosphere performance         | There are air inlets and outlets at both ends of the flange. The pressure gauge is installed on the metal flange. The precision needle valve can adjust the air intake and output, and can be fed with protective gases such as nitrogen, argon, and hydrogen. |
| equipment protection           | Modular control, sound and light alarm signal will be sent out for over temperature and broken coupler in the working process, and the protection action will be completed automatically                                                                       |
| 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                                                                                  |
| shell                          | High-quality cold-rolled steel plate CNC machine tool blanking processing, after welding, grinding, polishing, phosphating, pickling, surface electrostatic spraying plastic powder                                                                            |
| Quality Certification          | ISO9001 CE SGS TUV                                                                                                                                                                                                                                             |
| The standard configuration     | 1. 1 furnace body 2. 1 temperature controller 3. Power cord 3 meters 4. 1 thermocouple 5. 1 manual<br>6. One furnace hook 7. One pair of high temperature gloves 8. Two pipe plugs 9. One set of sealing flange                                                |
| Optional accessories           | 1. Optional rotary vane vacuum pump (vacuum degree $\leq 5\text{pa}$ ) 2. Optional digital vacuum gauge (( $1.0 \times 10^5$ - $1.0 \times 10^{-1}\text{pa}$ )) 3. Optional float flowmeter (range 60-600ml/min) 4 , optional corundum boat                    |



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