



TORONTECH

3-ZONE TUBE FURNACE 1200°C - TT-TF3Z-80- 1200



3-Zone Tube Furnace 1200°C – TT-TF3Z-80-1200 is a high-performance three-zone tube furnace with a maximum temperature of 1200°C. It features a manual top-opening design and a split-chamber annular heating system that ensures excellent temperature uniformity.

Designed for horizontal material loading, each of the three zones operates independently, with a heating length of 440 mm per zone. The furnace includes a high-precision PID temperature controller capable of storing up to 30 programmable segments.

It supports the introduction of protective gases such as nitrogen, argon, and hydrogen, making it well-suited for batch heat treatment processes involving advanced materials like metals, ceramics, nanomaterials, and carbon-based substances in both vacuum and controlled atmosphere settings.

APPLICATIONS

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- **High-Performance Three-Zone Heating for Advanced Materials** – The 3-Zone Tube Furnace TT-TF3Z-80-1200 is engineered for precise sintering and high-temperature heat treatment of metals, ceramics, nanomaterials, and carbon-based substances. Its split-chamber annular heating system delivers exceptional temperature uniformity across three independently controlled zones, each with a 440 mm heating length, ensuring optimal thermal consistency for batch processing in research and industrial applications.

- **Versatile Laboratory & Industrial Use** – Designed for horizontal operation with a manual top-opening lid, this furnace accommodates easy material loading and handling. The high-precision PID controller stores up to 30 programmable segments, allowing complex temperature profiles to be executed reliably. Protective gases such as nitrogen, argon, and hydrogen can be introduced, supporting vacuum or controlled-atmosphere operations for advanced materials processing in universities, research centers, manufacturing facilities, and aerospace or petrochemical applications.
- **Furnace Shell & Refractory Insulation** – Constructed from Q235 low-carbon steel with a corrosion-resistant, electrostatically treated surface, the furnace shell integrates a double-layer metal frame with a heat-insulating fan system to maintain a low exterior temperature. The multi-layer insulation system, composed of lightweight alumina ceramic fiber and high-quality insulation boards, is asbestos-free and designed to minimize heat loss while reducing energy consumption.
- **Heating System & Temperature Control** – The furnace is equipped with premium HRE metal and ceramic heating elements, arranged in rings or dual sides to ensure even heating. Each of the three zones operates independently for precise thermal management. The PID control panel with SSR/SCR support, along with an international-standard thermocouple, heating status indicator, and over-temperature alarm, provides safe, accurate, and reproducible results.
- **Vacuum & Atmosphere Compatibility** – A 304 stainless steel sealing flange allows for vacuum or controlled-atmosphere operations. The working tube is supplied in high-purity quartz by default, with optional metal or alumina tubes to suit specific applications, making it versatile for research and industrial processes requiring precise thermal and environmental control.
- **Model Options & Technical Specifications** – Available in multiple tube diameters (Φ40–Φ100 mm) and heating powers (5 kW–12 kW), supporting maximum temperatures of 1200–1700 °C depending on configuration. Each zone features independent temperature control and ± 1 °C precision, ensuring uniform heating across all sections of the tube.

FEATURES

Furnace Shell

- The shell is constructed from Q235 low-carbon steel and features a corrosion-resistant, electrostatically treated surface.
- Its durable double-layer metal frame is integrated with a heat-insulating fan structure, keeping the external surface temperature low.
- Designed for horizontal operation, the furnace includes a top-opening mechanism for easy access and user-friendly handling.

Refractory Material

- The multi-layer insulation system consists of lightweight alumina ceramic fiber and high-quality insulation board backing. It is asbestos-free and designed to minimize heat loss and reduce energy consumption.

Heating System

- Equipped with premium metal and ceramic heating elements, the system delivers efficient free-radiation heating throughout the chamber.
- The elements are arranged in a ring or on both sides to ensure excellent temperature uniformity.
- Three independent heating zones allow separate temperature control for each zone, enhancing overall uniformity and precision.

Temperature Control Panel

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

Program Controller

- The advanced controller supports complex thermal processes and offers intuitive operation with flexible programming.
- Capable of storing up to 30 programmable segments, it includes over-temperature and fault detection functions with automatic safety protection.

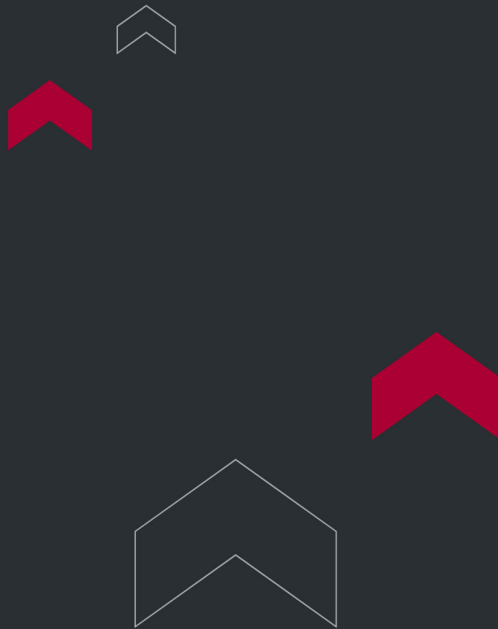
Vacuum & Atmosphere Compatibility

- Fitted with a 304 stainless steel sealing flange, the furnace can operate under vacuum or controlled atmosphere conditions.
- The working tube is available in quartz glass, metal, or alumina to accommodate various applications and environmental requirements.

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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