METAL VACUUM TUBE FURNACE

(RT-1000-130)

PRODUCT MANUAL

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CATALOG

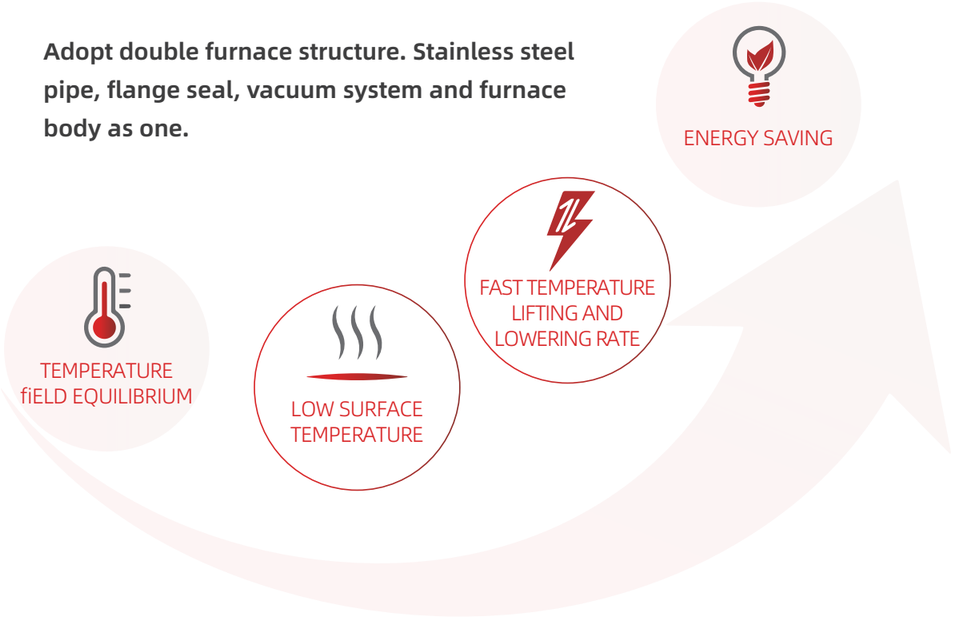
Thank you for purchasing RT series annealing furnace.
In order to avoid the damage to the furnace, please read the manual carefully before using it.

01/

OVERVIEW OF THE METAL VACUUM TUBE FURNACE

This RT-1000-130 type annealing furnace takes silicon carbon rod as the heating element, adopts double layer shell structure and 31 section program temperature control system, phase shift trigger, silicon control control, furnace adopts high purity aluminum fiber, vacuum forming fiber poly light plate material.

Adopt double furnace structure. Stainless steel pipe, flange seal, vacuum system and furnace body as one.



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TECHNICAL PARAMETERS OF METAL VACUUM TUBE FURNACE

Project \ Model	RT-1000-130	
	Company	Index value
Furnace structure		Double-layer shell structure
power rating	KW	5KW
rated voltage	V	220V
frequency	HZ	50
number of phases	each other	uniphase
maximum temperature	℃	≤980
end-use temperature	℃	950
heating rate	℃/min	≤20℃/min
Heating area size	mm	（ diameter）130*300mm
Visual dimensions (subject to the actual conditions)	mm	670*790*790mm （Wide * deep * high）
precision	℃	≤±1
Temperature control mode		PID regulate
Thermocouple model	scale division	Type K thermocouple
heating element		Elema
Furnace material		310 Stainless steel
weight	KG	approximately100
Furnace surface temperature	℃	≤55
Type of the furnace-connected air switch	Uniphase 220V	
vacuum system	Equipped with a vacuum pump of 1 set	
vacuum degree	-0.1Mpa	
Can pass the atmosphere	9Nitrogen, argon, etc. / inert gas	
flange	Adopt quick connection flange unilaterally	

03/

STRUCTURE PROFILE

This series of metal vacuum tube furnace shape are cuboid.The furnace shell is made of cold-rolled plate by folding edge welding. Studio for a 310 stainless steel pipe. The outer vacuum formed aluminum oxide fiber furnace, heating elements are placed in the furnace, the furnace and shell are filled with 1400 fiberboard, double shell structure, temperature control system and furnace body integrated design.

❶ The sealing of the furnace body includes several parts:

❷ The furnace body flange is welded after finishing, and do kerosene leakage inspection;

❸ The furnace and flange are sealed by high temperature fluorine rubber ring;
One end of the flange is equipped with an air inlet and the rear of the furnace pipe, and the inlet and exhaust are controlled by stainless steel ball valve.

04/

INSTALLATION AND WIRING OF THE EQUIPMENT

A The vacuum sintering furnace must be installed on a horizontal platform, away from explosive gases and materials;

B The terminal of the furnace shall be connected to the air switch and the power supply 220V.

05/

EQUIPMENT OPERATION

1. After the line is connected, check whether the line is right;
2. Turn on the air switch;
3. Rotate the switch to see whether the temperature control instrument is displayed;
4. Put the material in the furnace, put the material in the middle with crucible pliers; then put in the furnace.
5. Lock the flange with four bolts (drop the sealing ring)
6. Open vacuum pump switch to-0.1 Mpa (always)
7. Set the instrument and start heating (refer to the instrument specification, other parameters of the instrument have been set before the factory, the user only needs to set the required temperature heating, constant temperature and cooling program curve).

06/

BASIC OPERATION AND PRECAUTIONS OF THE INSTRUMENT

For a detailed description of instrument operation, please contact our company technician, and here only provides some common operations to facilitate the use of users.

1.Features of the instrument

A Automatic PID control, precise control at low temperature, medium temperature and high temperature;

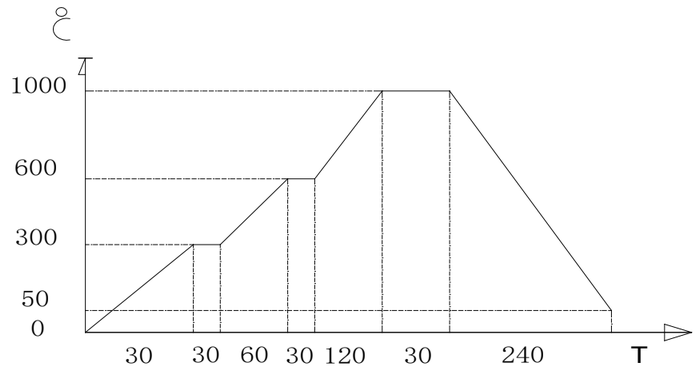
B The instrument has the function of even break protection, and the instrument automatically stops running after the even break;

C the instrument can view the current running program segment and the running time of the segment;

D the instrument has the function of self-setting and over-temperature protection.

E The instrument has the function of automatic shutdown;

2.Temperature rise, constant temperature and cooling curve diagram:



3.Reset the stop-output state diagram

❶ Set temperature value
❷ Run & Output indicator light
❸ High limit alarm indicator
❹ Lower limit alarm indicator
❺ Function cycle key
❻ Program entry, cursor shift, return program function key
❼ Run, pause, hold output, decrement function key
❽ Stop, add value function key

4.Program picture

Picture 1

Picture 2

Picture 3

Picture 4

Picture 5

Picture 6

Picture 7

Picture 8

Picture 9

Picture 10

Picture 11

Picture 12

Picture 13

Picture14

Picture15

Picture 16

5.Settings of instrument program

<1> The instrument has 30 programs, the setting program must show the reset stop output state drawing face, press ◀ <A/M> key for one second, enter screen 1, SP 01 This screen is the initial temperature value of the program, the original value of the instrument is 0-32, (can not be set);

<2>, Key for ↻ one second, enter screen 2, t-1 Set the heating time value of the first program, press ▼ or ▲ key to add or subtract the value, for example: the heating time is 30 minutes;

<3>, button ↻ for one second, enter screen 3, SP 02 this screen sets the temperature value of the first paragraph of the program, press ▼ or ▲ key to add or subtract the value, example: heat up 300℃;

<4>, Key for ↻ one second, enter screen 4, t-2, set the time value of the second program, press ▼ or key ▲ to add or subtract the value, example: constant temperature time 30 minutes;

<5>, button ↻ for one second, enter the screen 5, SP 03 this screen set the temperature value of the second section of the program, press ▼ or key ▲ to add or subtract the value, example: constant temperature 300℃;

<6>, button ↻ for one second, enter the screen 6, t-3 the time value of the third paragraph of the program, press ▼ or key ▲ to add or subtract the value, the heating time is 60 minutes;

<7>, button ↻ for one second, enter screen 7, SP 04 Set the temperature value of the third program, press ▼ or key ▲ to add or subtract the value, example: heat up 600℃;

<8>, key for one second, enter screen 8, t-4 set the time value of the fourth paragraph program, press or key to add or subtract the value, example: constant temperature time 30 minutes;

<9>, button for one second, enter screen 9, SP 05 Set the temperature value of the fourth paragraph, press or key to add or subtract the value, example: constant temperature 600℃;

<10>, button for one second, enter screen 10, t-5 set the time value of the fifth paragraph, press or add or subtract the value, example: heating time 120 minutes;

<11>, button for one second, enter the screen 11, SP 06, set the temperature value of the fifth paragraph program, press or key to add the key value, example: heat up 1000℃;

<12>, button for one second, enter screen 12, t-6 set the time value of the sixth paragraph, press or add or subtract the value, example: constant temperature time 30 minutes;

<13>, button for one second, enter the screen 13, SP 07 set the temperature value of the sixth paragraph program, press or key to add or subtract the value, example: constant temperature 1000℃;

<14>, button for one second, enter the screen 14, t-7 set the time value of the seventh paragraph program, press or key to add or subtract the value, example: cooling time 240 minutes;

<15>, button for one second, enter the screen 15, SP 08 set the temperature value of the seventh paragraph program, press or key to add or subtract the value, example: cool 50℃;

<16>, button for one second, enter the screen 16, t-8 this screen set the instruction of the end of the eighth paragraph, press or key to add or subtract the value, example: program end instruction-121;

<17>, at the same time and one second, the instrument returns to reset stop output state;

<18>. Press Turn-on to close the AC contactor and hear a click, otherwise please check the circuit or contact the manufacturer.

<19>, Press RUN / HOLD key for 2 seconds for the furnace operation

EXPLAIN

1. SP 01 indicates the temperature;
2. t-1 means the time;
3. t-121 indicates the end of procedure instruction;
4. button for two seconds, display LOC parameter lock character, 0 means closed, 808 means open, continuous button can view the instrument parameter function setting table, has been adjusted before the factory, generally do not need to set.
5. When setting the program temperature or time, the button will not let go, the instrument will automatically return to the initial value of SP 01; continuous button for one second, can be shifted, and displayed, easy to set the value;
6. The set program and parameter values will be automatically saved.

07/

FURNACE MAINTENANCE AND PRECAUTIONS

(1) When the electric furnace is used for the first time or after a long time, the oven must be used,Otherwise, it is easy to cause the furnace cracking;

(2) Keep it clean regularly, and regularly check whether the electric furnace wiring is in good contact;

(3) The electric furnace is applicable to the following working conditions:
A. Indoor use;
B. No elevation exceeding 1000 meters;
C. Ambient temperature is in the range of ± 5-40℃;
D. The relative temperature of the surrounding environment does not exceed 85%;
E.There is no conductive dust, explosive gases and corrosive gases that can seriously damage metals and insulation.

(4) When the electric furnace is used, the furnace temperature shall not exceed the rated temperature, so as not to damage the heating components. It is forbidden to pour various combustible liquids and molten metals into the furnace;

(5), in the process of work, generally below 300℃, the heating rate should not be too fast, because at the beginning of the heating, the furnace is cold, need to absorb a lot of heat;

(6) The hydrogen furnace must be limited below 300℃ by 15% -20%

08/

COMMON FAULTS AND TROUBLESHOOTING

Fault phenomenon	Cause of failure	Troubleshooting
After turning on the power < Switch > Instrument, voltage and ammeter are not on	RD1circuitbreaker trip	After checking no short circuit Push on the circuit breaker
No voltage or current	RD2 circuit breaker trip	After checking no short circuit Replace the push on circuit breaker
When heating, PV temperature display value is not Increase but decrease	Reverse connection of positive and negative poles of thermal thermocouple	The thermocouple The positive and negative electrode lines are changed
Ammeter has no current but voltmeter has voltage	Heating element broken	Replaceheatingelement
The power supply is all right, but the furnace doesn't work	Wrong instrument parameter setting	Call to inquire about the modification parameters
The instrument and power supply are normal, but the temperature cannot be raised	line fault	Notify maintenance personnel