









ZIRCONIA SINTERING FURNACE

Operational Manual



Thank you for your order of our products. To avoid any misuse and damage, please read the operation instruction carefully before operation

Precautions

-  Do not heat flammable and explosive materials.
-  In order to protect the furnace clean and intact, please choose a suitable Bantering plate.
-  The electric furnace using a special high-purity heating rods. Maintenance replacement later, in order to ensure the Bantering effect, please use the original parts.
-  It is strictly forbidden to disassemble the hearth and distribution box of electric furnace arbitrarily, so as to avoid circuit failure.
-  It is recommended that the temperature of the electric furnace is cooled to below 300 ° C before opening the door. Otherwise, thermal shock to the refractory caused by the cold air may cause the lining to crack.
-  In the process of using this electric furnace, small cracks in the lining are normal. If there are multiple penetrating cracks, may affect the furnace insulation and heating performance.
-  It is recommended to tighten the clamp on the cold end of the heating rod every 3 months to avoid frequent contact between the conductive strip and the heating rod due to frequent thermal expansion and contraction, resulting in electric arc and breaking the cold end of the heating rod.
-  Please read this manual carefully before operating the furnace.

Contents

1.Introduction.....	4
2.Technical Specifications.....	4
3. Sintering furnace schematic.....	4
4.Temperature Controller.....	4
5.Operation instruction of touch screen.....	5
5.1 Screen introduction.....	5
5.2 Program settings.....	7
5.3 Choose program.....	9
5.4 Run the program.....	12
5.5 End the program.....	12
6.Touch screen parameter settings.....	12
7.History curve view.....	14
8.Replacement of silicon molybdenum rod method.....	14

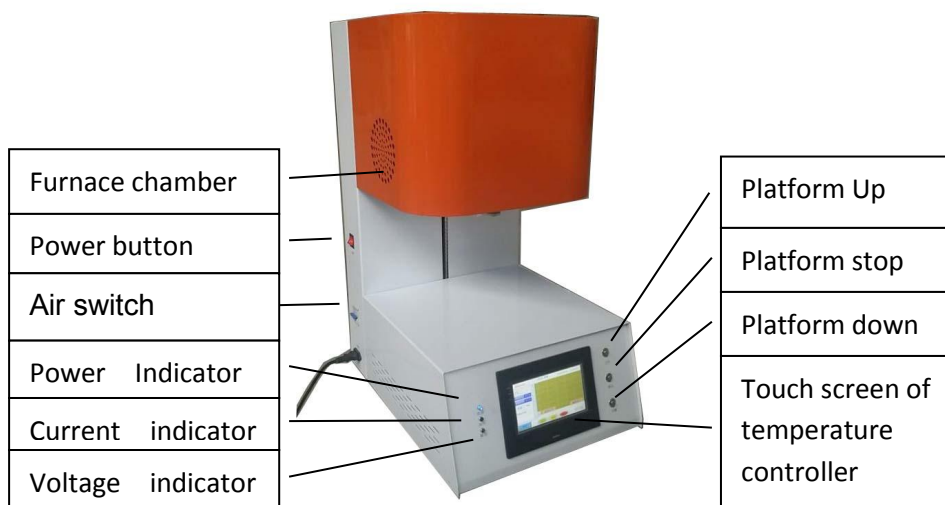
1.Introduction

- The crystal furnace designed for Bantering Draconian. Heating element using high purity silicon molybdenum rods, Draconian without any pollution, and has a high surface temperature, not easy to deformation, the advantages of long life.
- Furnace material made of crystalline mull ceramic fiber is vacuum-adsorbed to strictly control the iron impurity content in the forming process, which can meet the requirements of various rapid Bantering and make the crystallization environment of Draconian more pure.
- This product has been widely used in domestic and foreign workers.

2.Technical Specifications

Name	Unit	Parameter
Working Power	KW	1.5 KW
Voltage	V	AC220V,50/60Hz,Single phase
Max. Temperature	°C	1700
Continuous working temperature	°C	1600
Suggested heating rate	°C/min	≤ 20
Temperature accuracy controlled	°C	± 1
Heating element		MoSi2 Heater
Connection of heating element		In series
Thermal Couples		B type
Dimension of inside chamber	inch	100x100x100mm

3. Bantering furnace schematic



4. Temperature Controller

1) Adopt advanced AI artificial intelligence adjustment algorithm, no overshoot, can achieve any slope rise and fall control, with jump (cycle), run, pause and stop programmable / operational commands.

2) Measurement accuracy: 0.2 level

3) Alarm function: upper limit alarm, input open alarm.

4) 50 sections of program control functions

5. Operation instruction of touch screen

5.1 Screen introduction

☞ Before you run the furnace, make sure the power supply is connected correctly

Then press the power switch (power lock), touch screen dispatcher.(Fig.1)



Fig. 1

☞ When the touch screen is turned on, the furnace type is displayed first (Figure 2). After a few seconds, it will display the main screen. (image 3).



Fig.2

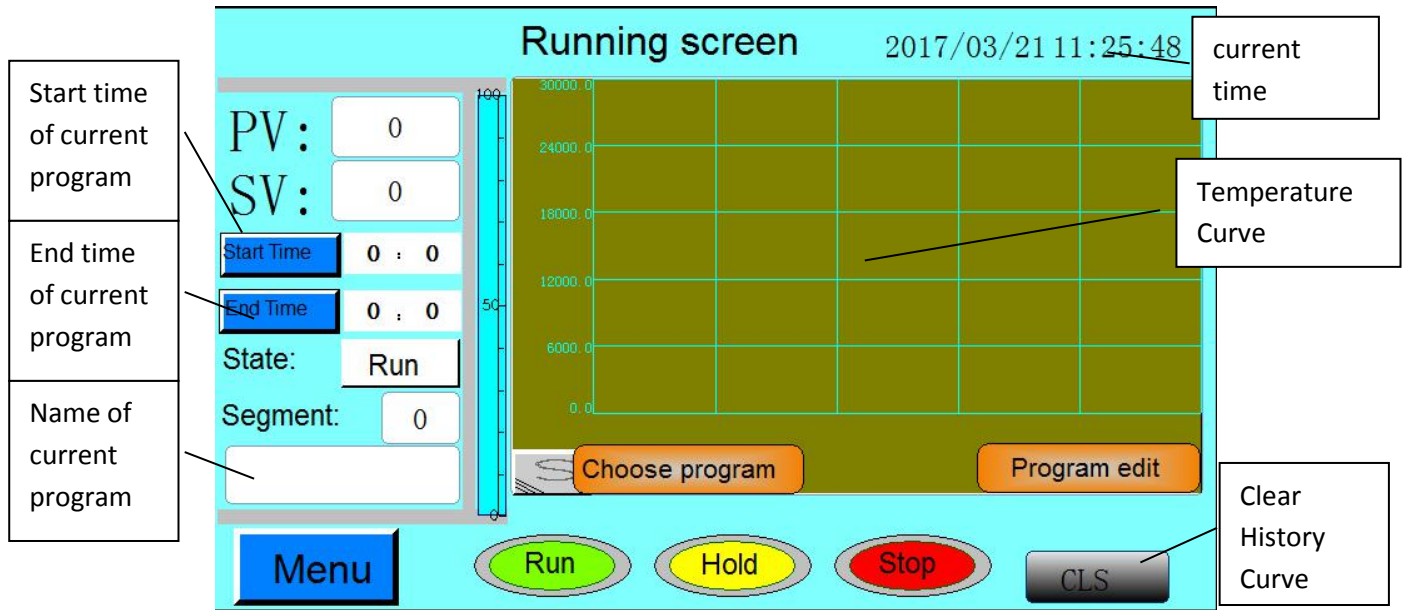


Fig.3

Instructions of Buttons:

PV: actual temperature measured in the furnace by the thermocouple

SV: According to the process program set, the meter calculates the target temperature.

Status: Displays the current working status of the electric furnace. Run, hold, stop three states

Segment: the first few paragraphs of the currently running Bantering program

Menu: Press and enter the password 123 to display the menu page Run: Press to run the furnace for heating.

Choose program: press this button to easily select the need to use the program, select the program name in the left side of the blank box displayed. (According to the requirements of different zirconium Bantering, you can preset 30 Bantering program, and can be directly selected by this key).

Program edit: press this button according to the requirements of different zirconium Bantering to prepare the corresponding Bantering process. (According to the requirements of different zirconium Bantering, you can preset 30 Bantering procedures for selection).

Run: Click this button to start the program.

Hold: Click this button, the program pauses, the temperature remains.

Stop: Click this button to end the program and no longer execute the unfinished program.

CLs: With the implementation of the program, the program curve will automatically appear on the screen, and can not automatically clear. Before executing the next Bantering program, you can

click this button and wait for 36 seconds to clear the previous program run curve to prepare for the new run curve.

5.2 Program settings

☞ From the "main run interface" click on the "Edit Program" directly into the program editing page (Figure 4)

Click the blank box to name the new program

Program edit

2017/03/21 11:36:33

Name: Save

SEG	Start Temp.	End Temp	Time
T1	25.0	300.0	30
T2	300.0	900.0	40
T3	900.0	1300.0	45
T4	1300.0	1300.0	120
T5	1300.0	800.0	60
T6	800.0	0.0	-121
T7	0.0	0.0	0
T8	0.0	0.0	0
T9	0.0	0.0	0
T10	0.0	0.0	0

Menu

Program NO. - 1 + Next page

Return

First for the new program

Fig4

☞ At the bottom of the page "program number" for the program to compile a serial number.
Name a name for the program in the "Name" column at the top of the page.

☞ Click the blank box after the "name", a soft keyboard appears, you can use the letters and numbers for the edited program named. Click the "ENT" key on the soft keyboard to confirm.
(Figure 5)

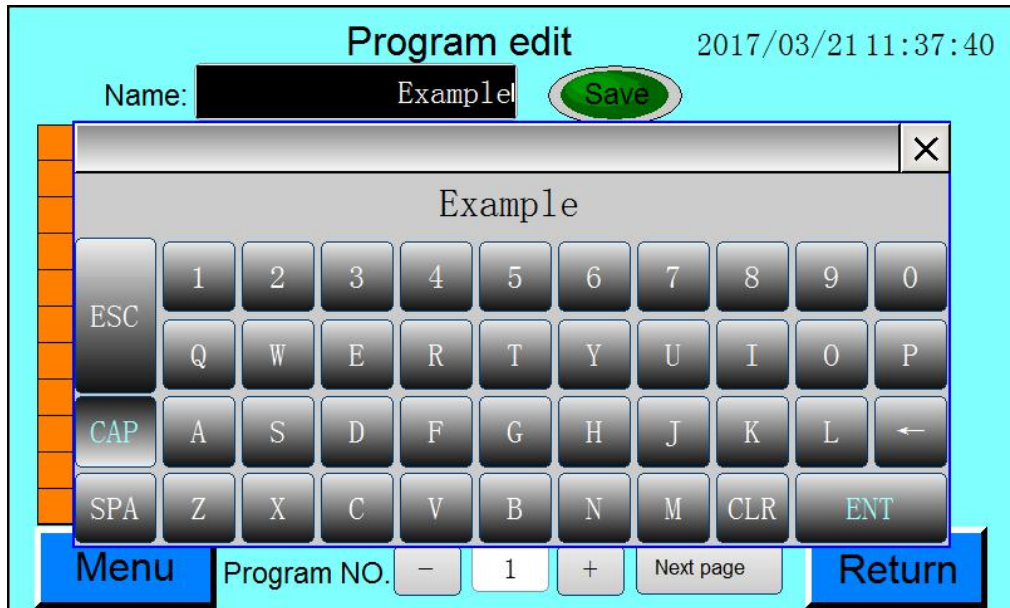


Fig.5

- ☞ The serial number and name of the program to confirm, you can edit the Bantering process of heating, insulation, cooling process.
- ☞ In order to more intuitively understand the programming method and meaning of the Bantering process, the programming curve and picture are as follows (Figure 6)
- ☞ In order to better understand the meaning of each data, compile the following process table (Table 1), to facilitate users to more in-depth understanding and master programming methods. (The time of each program is defined as the time period - the line segment, the temperature of each program is defined as the time - point)

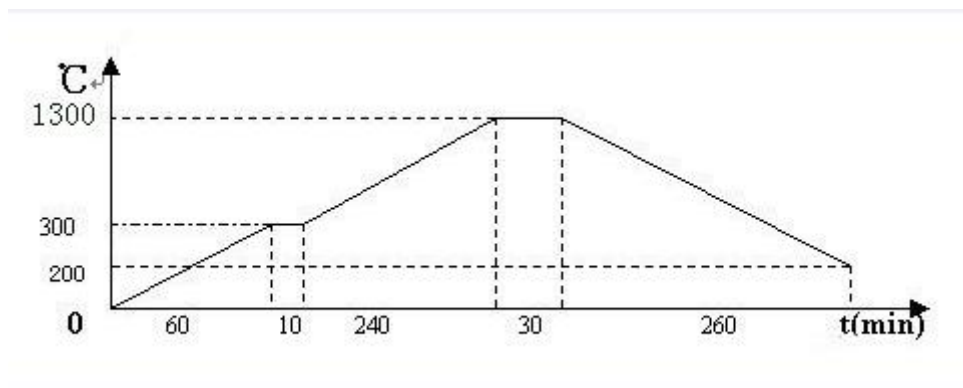


Table 1



Fig.6

- ⚠ The last step in the time setting must be -121. Does not represent any time, just a command, meaning: End the program.
- ☞ After editing the program, click the green "Save" button, the program will automatically save up.

5.3 Choose program

For editing the saved program, you can choose to use in two ways.

- **Method 1:**
- ☞ Click "Menu", enter the menu password "123", enter the menu interface, click "Choose Program" (Figure 7)

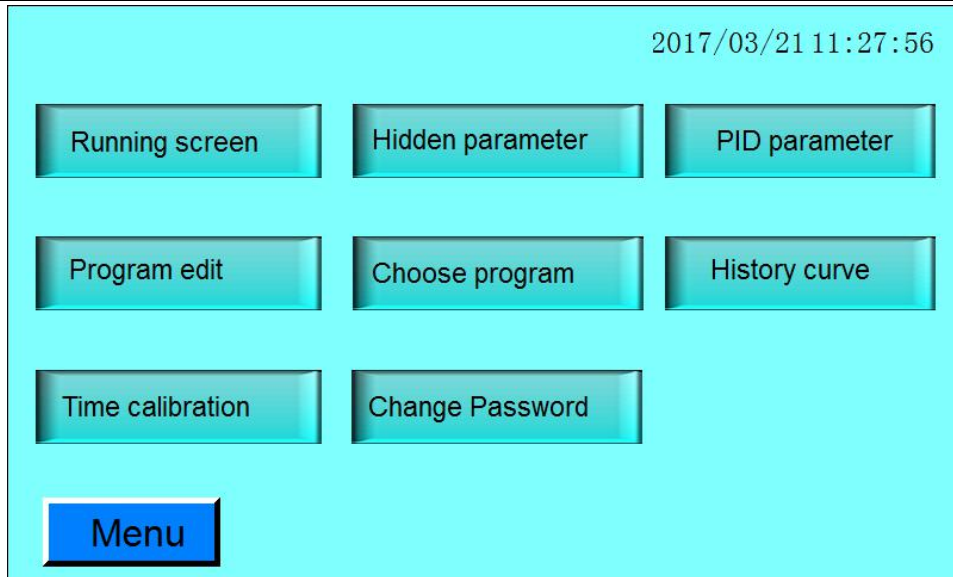


Fig.7

- **Method 2:** Click on the "Choose program" of the running interface (Figure 8)

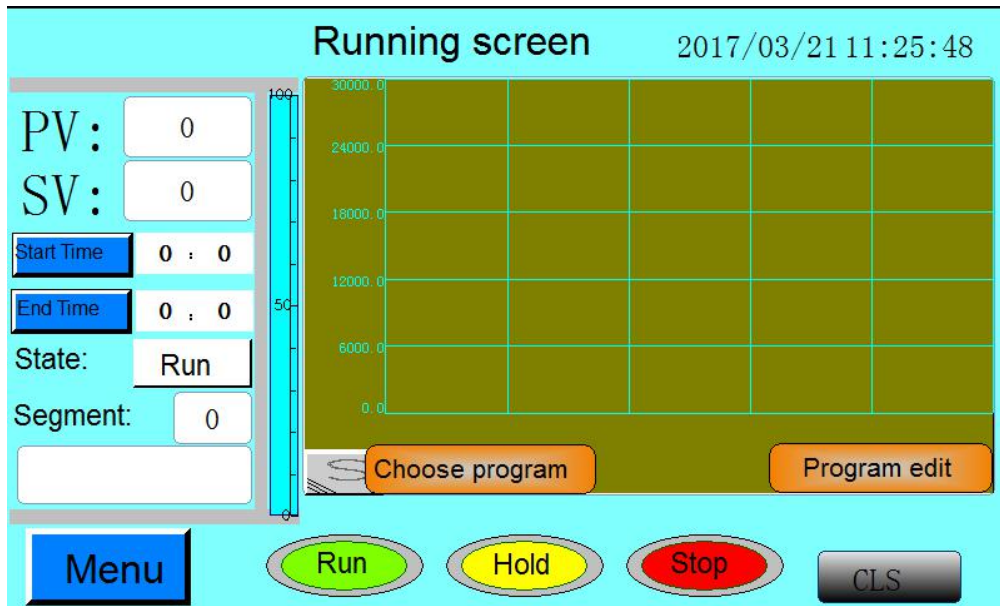


Fig.8

- The above two methods are to enter the "Choose Program" page, select the need to use the program (Figure 9), pop-up download interface. Click "program download", select "Yes", then select the program automatically downloaded to the operation interface (Figure 10). Turn off the download interface and return to the run interface. The lower left corner of the running interface The current program name column will show the downloaded program (Figure 11)



Fig.9

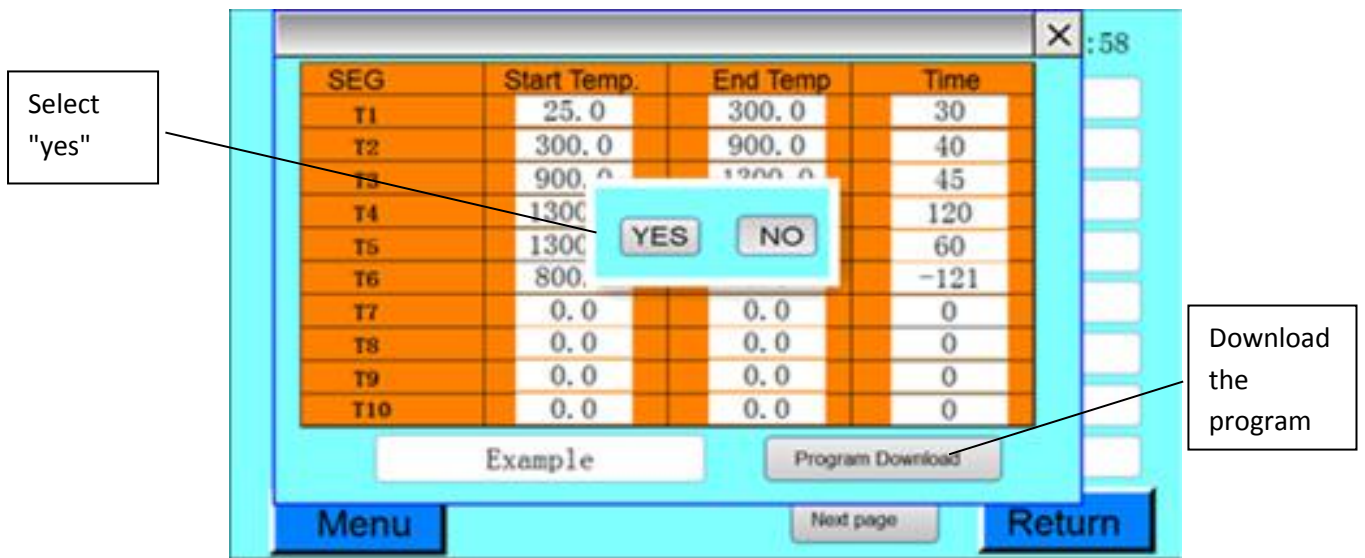


Fig.10

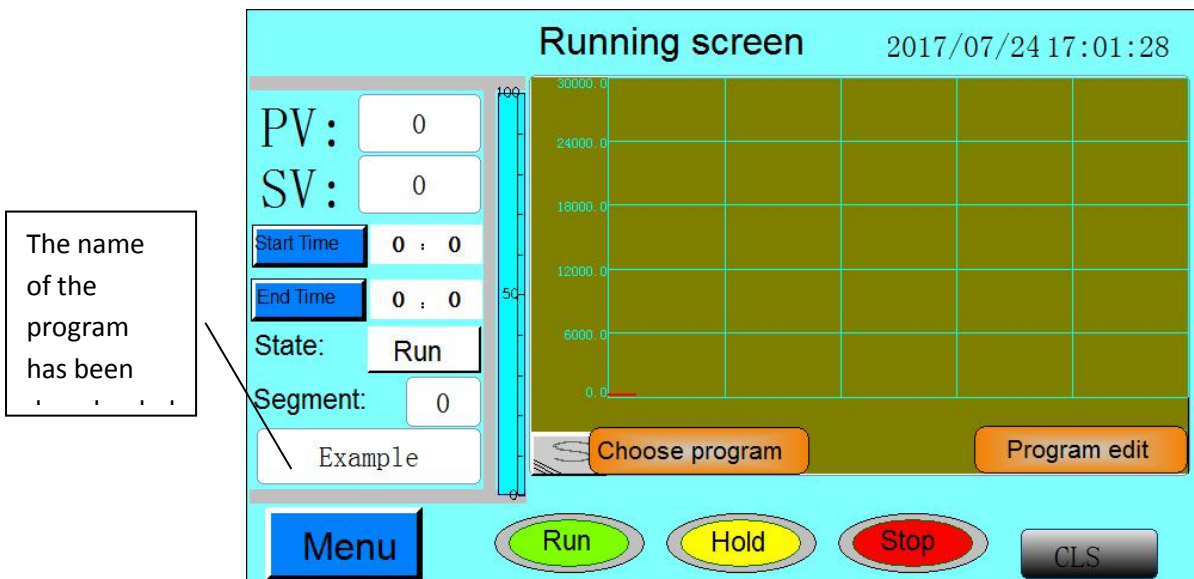


Fig.11

5.4 Run the program

- ☞ Operation interface has recorded temperature curve function. Before running a new program, you need to clear the old temperature ramp and click the Clear Curve button for 36 seconds (the curve data is recorded every 36 seconds). The old temperature ramp is cleared on the interface (Figure 11)
- ☞ Then click on the menu option "Run Interface", enter the main run interface. There are three buttons with green, yellow and red. The green button is "Run", click on the status bar shows "run", this time the furnace began to build a good temperature program to heat up (Figure 11).
- ☞ If you need to pause during the warming process, press the yellow button "Hold", the temperature rise program is stopped and the temperature is kept (Figure 11).
- ☞ If you need to manually stop, press the red button "stop", the program ends. (Figure 11)

5.5 End the program

- ☞ Program is running, automatically enter the stop state.
- ☞ Press the "Power switch" to turn off the operation panel.
- ☞ Close the corresponding air switch in the workshop or laboratory.

6.Touch screen parameter settings

- ☞ Click the "Menu" button to enter the menu option. You can see two parameter items, "Hidden parameters" and "PID parameters".
- ☞ **Hidden parameters:** hidden parameters for the factory preset parameters, this parameter is based on the furnace control principle and hardware configuration, unless the user thoroughly understand the meaning of these parameters, or are not allowed to make any changes. For security reasons, a password (123) (Figure 12)

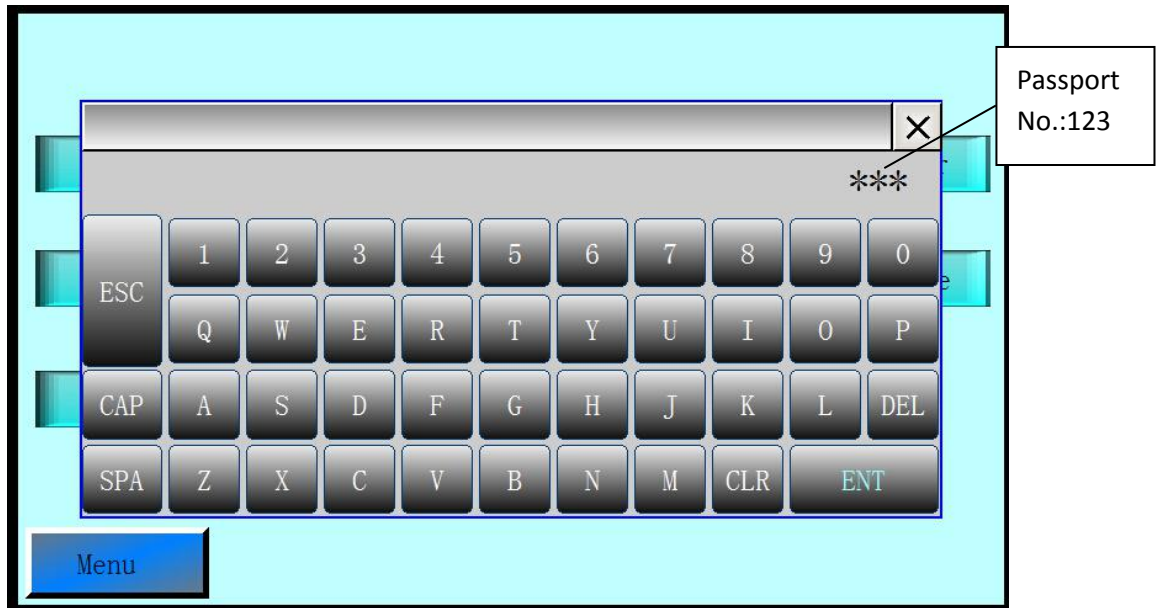


Fig.12

- ☞ **PID parameters:** the field parameters for the PID fuzzy adjustment parameters, play a control output ratio of the size of the accuracy of temperature control accuracy of the role. Electric furnace before the appearance, the field parameters by the company's technical staff to debug the results of the furnace. Please do not change it at will.
- ☞ If the electric furnace in the course of the use of 300 degrees after the SV and PV gap is too large, or PV time is lower than the SV, sometimes more than SV, resulting in shock, you need to adjust the M5, P, t value. Please contact our technical staff, under the guidance of their changes (Figure 13)

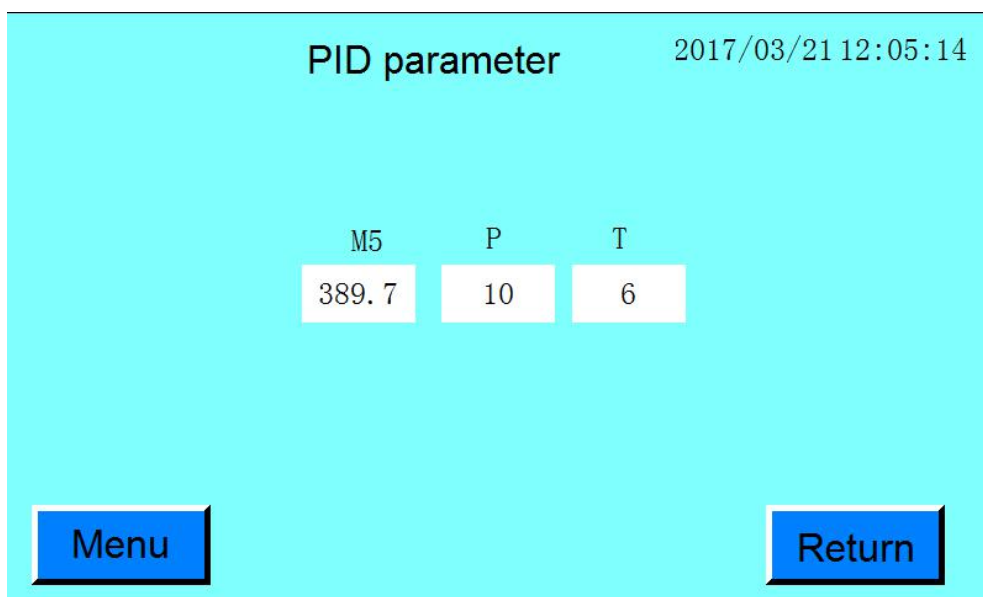


Fig.13

7. History curve view

- The touch screen has the function of recording the historical process of the operation, which makes it easier for the user to change the Bantering curve before and after the Bantering curve. Set the history of the start time, and view the length of time to view the history. (Figure 14)

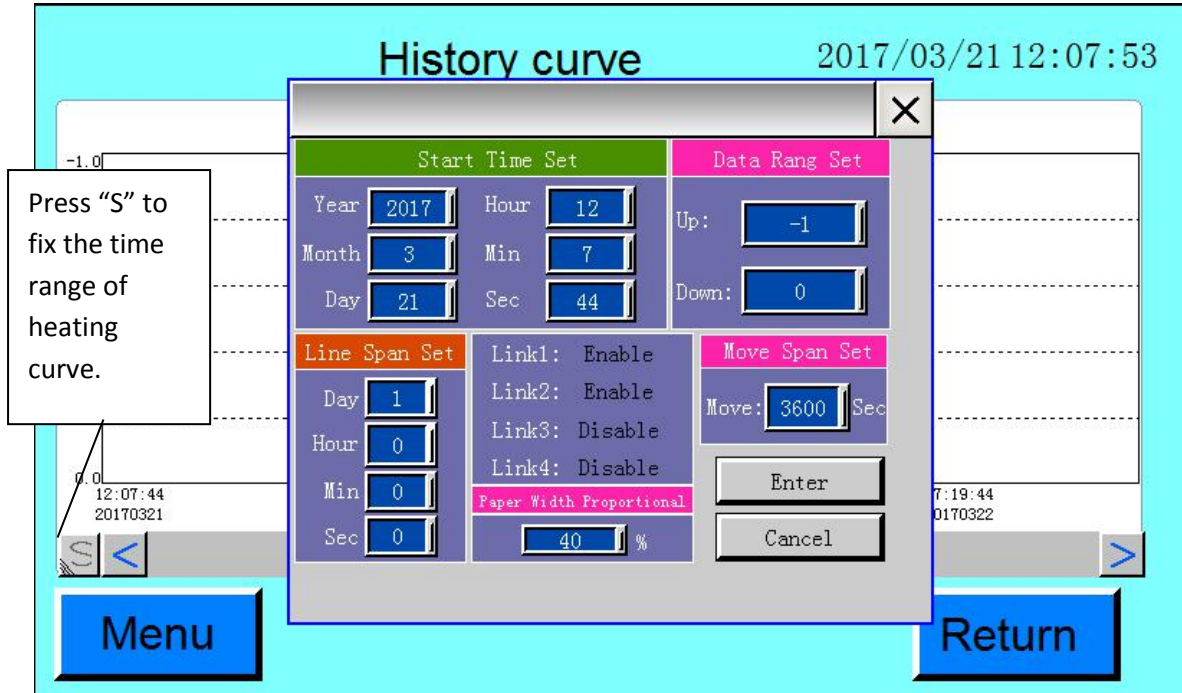


Fig.14

8. Replacement of silicon molybdenum rod method

- ⚠** Our company uses high purity silicon molybdenum rods for Draconian Bantering without causing any pollution to Draconian crowns or bridges. As the silicon molybdenum rod is a vulnerable part, replace the silicon molybdenum rod, please be careful operation.
- Use a screwdriver to remove the screw on the top iron cover and remove the top cover. (Figure 15)
- Unscrew the screws at the top of the stainless steel clip on the silicon molybdenum rod and remove the catch. (Figure 16)
- Remove the braid. (Figure 17)

- ☞ Directly out of the broken silicon molybdenum rod, remove the stainless steel ceramic card. (Figure 18)
- ☞ Carefully remove the stick. (Figure 19)
- ☞ Replace the new silicon molybdenum rod, followed by a fixed stainless steel ceramic card, woven belt and stainless steel clip. (Figure 20)



Fig.15



Fig.16



Fig.17



Fig.18



Fig.19



Fig.20

- ⚠ Silicone molybdenum rod cold end fixed braid and stainless steel clip, be sure to tighten to prevent poor contact and ignition off the cold end of silicon molybdenum rod. For every 3 months, please tighten a certain braid and stainless steel clip to prevent the thermal expansion and contraction caused by poor contact.

If you have any comments, please contact us at our company.

Your support is the driving force of our growth!