

CeramStar® PF1

User Manual



VACUUM PORCELAIN FURNACE

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1.SAFETY AND CLEANING

1. Porcelain furnace is use for firing ceramic materials ofteeth.
2. The device must be put at least 25-30cm away from the wall.Be assure that the Porcelain furnace must be under normal ventilation environment.
3. The sockets must be put near the power source.The instrument board behind must be connected firmly.
4. Do not operate near by inflammable.
5. Please use dry or a little wet cloth clean the surface of the Porcelain furnace.Do not use solvent or other liquid cleaner to purify the control panel.Please do not let the liquid seep into the Porcelain furnace.
6. Damages caused by mis-operation can not be included in warranty scope.
7. In order to the best work environment,we suggest you use a exclusive circuit. The socket use an overload resistant protector would be best.The three-phase circuit must have a dedicated line for a reliable groundingwire.
8. Before any maintenance,you must plug off from the electrical socket .
9. In order to avoid any accident of serious scald,please use proper instrument to put in or move the objects .
10. Do not use nippers or other instrument to operate the furnace,these instruments may damage the screen or the membrane.
11. The firing deck is a movable (up or down)part.The to-and-fro motion is controlled by the program.
12. The inner place of the furnace include fireproof cera mic-fiber and porcelain dust,these may be released by the movement of opening.Once these materials are inhaled by human,it may cause cancer.The dust can irritate the skin and eyes,cause the respiratory tract hoarse or fester.Do not use condense air blow the dust into the work environment.

CAUTIONS:

1. Please read the instruction carefully before you use the furnace. If you do not use the device according to the manual, the life span of the Porcelain furnace may be reduced.
2. The producer do not take the responsibility of lost caused by fault operation or misunderstand of the instruction.
3. Before move or assemble the furnace, please cool down the temperature.
4. Be careful for the part of high temperature when the device is operating.
5. The device is constructed according to a state of the art design and recognized safety regulations. However, if it is used inappropriately, hazards for the health and safety of the user or third parties may arise as well as the risk of damaging the device and other valuable assets.
6. After the back-plate has been removed, a voltage of up to 400 volts may still exist in components in the area of the power supply unit on the circuit board, even when the device is switched off.

The manufacturer is not liable for accidents to the user occurring when the device is open!

1. The standard for the user disassemble the instrument privately is depend on whether the easily damaged sticker is damaged.
2. Never start up the device without the firing socket attached.
3. In continuous operation (max. final temperature, max. firing time), some parts of the firing chamber may reach high temperatures (above 70 °C).
4. Do not reach into the open firing chamber when the device is switched on. There is a risk of touching electrically live or hot parts.

2、 THE INTRUCTION FOR THE Porcelain furnace

21 THE FUNCTIONS OF Porcelain furnace:

- Hyperbolic ceramic furnace function, the program can be set to single curve mode or hyperbolic mode, hyperbolic mode provides a complete crystallization process for glass-ceramic crystallization.
- Voice prompt function.
- High quality temperature automatic adjustment function, to ensure that the actual temperature error within + / - 1 degrees.
- Precision stepper motor drive, smooth free operation and no jitter.
- Quartz spiral furnace.
- Automatic temperature calibration before each baking procedure.
- Low noise tray, programmable speed.
- True color touch screen, easy to operate.
- 90 custom programs and built-in programs.
- Status indication.

22 THE INTRODUCTION OF SPECIFICATIONS:

OPERATION:

The velocity of temperature increasing: 200°C/min max.

(392° F /minute)

The max temperature: : 1200°C max

(2283° F)

The time which can be kept at the max temperature: 2 H

Vacuum level:1-101%

ELECTRIC POWER:

Operation range : 100-120V 50/60HZ 230V 50/60HZ

Electric current: 14.5ampere@110V 7.0ampere@230V

Power: max 1500w

TYPICAL SPECIFICATION:

WXDXH :width 27cm Depth 36cm Height 53cm

Usable measure (firing chamber): 9cm (3.5")

Net weight: 20Kg

Weight include the package:23.5Kg

23 AMBIENT CONDITIONS

- Indoor use
- Ambient temperature: 2°C to 40°C
- Relative humidity 80% at 31°C
- Maximum altitude: 1500 m (**Special Model:3500m**)
- Rated voltage fluctuations must not exceed plus/minus 10% of the rated voltage

24 DEVICE IN BOX COMPLETE WITH:

- 1 firing pan
- 1 connection cable for the mains power supply
- 1 instructions
- 1 Burning rack

3. SAFETY INSTRUCTIONS

3.1 PICTOGRAMS



This pictogram warns injured voltage. Before opening the device, it must be pulling out the mains plug.



This pictogram warns the hot surfaces. Burn injuries may occur.



This pictogram warns may cause personal injury or damage to the device.



This pictogram show useful tips, explanations and additional information.

4.INSTALLMENT AND START UP

4.1 THE PLACE OF INSTALLMENT

- The Porcelain furnace must be installed in the dry room, and it must be put at least 25cm away from the wall.
- If the temperature is below 15 °C (59 °F) (e.g. after transport), leave the device to stand for approx. 30 minutes before using it for the first time at room temperature.
- Ensure that the device is on a heat-resistant surface. The radiation and heating of the device is in the non-hazardous range. However, heat-sensitive surfaces of furniture and veneers could become somewhat discolored over time due to the constant influence of heat.
- Please avoid direct sunlight.
- **MUST NOT** put flammable around the Porcelain furnace.

4.2 CONNECTING THE DEVICE TO THE MAINS POWER SUPPLY

A、 Connect the vacuum pump, power supply and tube connection.

B、 Connect the device to the mains power supply using the supplied mains power cable.

Avoid connecting to multiple-outlet power strips with extension cords. In the event of overloading, a risk of fire exists.

Never start up the device without the firing socket attached!

4.3 Porcelain furnace STAND BY MODE INTRODUCTION

Idle temperature:

Idle temperature is Porcelain furnace not in firing, a temperature value user hope to it static. The furnace will automatically adjust the idle temperature according to the current mode.

Sound:

If sound function on, there will be a beep that press any key.

5. FURNACE HARDWARE (AND ACCESSORIES) INSTRUCTIONS**5.1 FUSES**

On the back of the device, there are 2 device fuses. The identification plates show information about the fuse ratings used in the device. Fuses with other ratings must not be used.

230V **T8H250V** 100/110V **T20H250V**

5.2 FAN

The device is equipped with a fan. Activation, deactivation of the fan are controlled automatically. The fan prevents excessive heating of the device and contributes to its general operating safety. For safety reasons, the device must not be operated without a fan. The upper cover of the firing chamber and the openings in the rear cover must not be closed or blocked.

5.3 SPARE PARTS

Spare parts must comply with the technical requirements determined by the manufacturer. This is always assured when using original spare parts .

6. WARRANTY AND LIABILITY

The PHOENIX furnace provide 1 years (Furnace, Resistance wire, Thermocouple provide one-year warranty) limited warranty: warranty starting from goods delivery for the first vendors.

Vacuum pump warranty time base on its instruction.

7. DESCRIPTION OF THE FURNACE

7.1 OPERATION PANEL



7.2 BUTTONS NAMES:

[FIRING] :Entering the 1 step sintering interface.

[2 STEP/GLAZE] :Enter the 2 step sintering interface.

[STANDARD]:Standard procedure selection.

[CUSTOM]:Custom program selection.

[PROGRAM]:Program parameter setting interface.

[SET]:Other settings.

[UP]:The tray rises.

[DOWN]:Tray down.

7.3 THE DISPLAYS INTERFACE

P 01: The current chosen program ID is 01. The following is the status of the programme.

1 STEP = 1 step programme; **2 STEP** = 2 step programme

TEMPERATURE 500C: The furnace temperature 500°C.

7.4 CHOOSE A CURRENT FIRING PROGRAM

Press **[CUSTOM]** enter program ID choose interface , as follow



Press program number ,then it will jump a soft keyboard. Use the key 0-9 input a program ID which you want, input the number, press OK complete the current program number choose.

If input wrong program number ,press BACK to cancel.

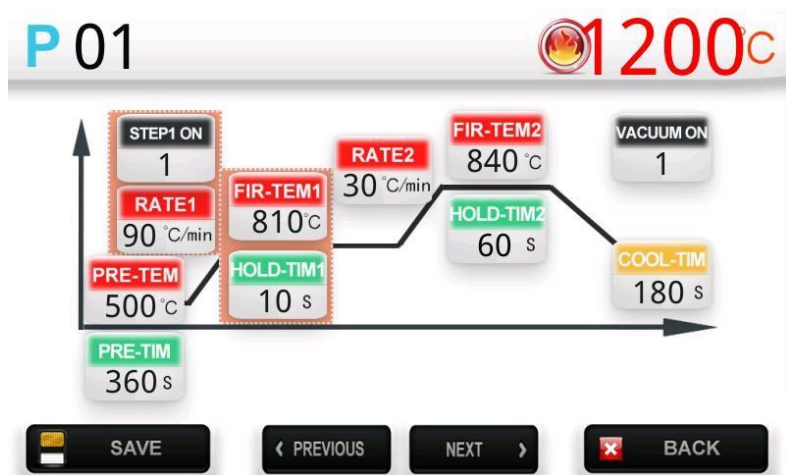
You can also use the **PROGRAM SETING** interface to select the program with "**previous page, next page**" button.

You can also press "**STANDARD PROGRAM**" to call the built-in program directly.

NOTE:The built-in program of Standard Program corresponds to the program number, and the standard program 1 corresponds to the program number 1. The parameters of standard built-in program 1 can be edited by editing program 1.

7.5 SET PARAMETERS FOR A PROGRAM

Press **[program-set]** to enter the program parameter setting interface. Press **"previous page, next page"** to select a program, and finally input 11 parameters in turn to complete the parameter setting of the current program.



Input parameters ok then please press key **[SAVE]** to save, Press **[CANCEL]** back.

Parameters table:

Parameter prompt	Description	Unit	
1.1 PRE-TEM	Pre drying temperature	°C	
1.2 PRE-TIM	Pre drying time	s	
1.3 STEP1 ON	The first temperature curve switch.		Set to 1 to activate, the first temperature curve is executed. Set to 0 to close, the program skips the first section of temperature curve and directly executes the second section of temperature curve.
1.4 RATE1	Temperature rate of the first temperature curve	°C/min	
1.5 FIR-TEM1	Maximum temperature of the first temperature curve	°C	
1.6 HOLD-TIM1	High temperature holding time of the first temperature curve	s	
1.7 RATE2	Temperature rate of the second temperature curve	°C/min	
1.8 FIR-TEM1	Maximum temperature of the second temperature curve	°C	
1.9 HOLD-TIM2	High temperature holding time of the second temperature curve	s	
1.10 COOL-TIM	Cooling time	s	
1.11 VACUUM ON	Vacuum switch		When it is set to 1, the whole process turns on the vacuum, and when it is set to 0, it turns off the vacuum

Step 1 on: when it is set to 1, the program is hyperbolic program, and the main interface displays "2step". When set to 0, The program is identified as a single curve program. The main interface displays "1step".

Vacuum on: when it is set to 1, the vacuum will be turned on in the whole process, and when it is set to 0, the vacuum will be turned off.

Error parameters remind:

When you input a program parameter or other parameters, you input a parameter the system can not run, or the parameter with Logic errors, system will automatic change into the maximum/minimum limit value.

7.6 COMPREHENSIVE PARAMETER SETTING

Press [SET] into SET interface,as follow:



7.7 BUTTONS NAMES:

[VACUUM TEST]: Start a Vacuum test.

[TEM FIX]: Fix the temperature correction.

[IDEL TEM]: Input the idle temperature. Idle temperature is Porcelain furnace not in firing ,a temperature value user hope to it static.

[MOTOR SPEED]: Pan speed set. Too fast or too slow will cause noise.

[PAN POS]: Starting the program, in the Pre-dry stage, the pan will up two times , this set are two up position.

[RESTORE FACTORY]: Restore to factory settings.

[CLEAN MODE]: Porcelain furnace impurity.

[SOUND]: Set Sound ON or OFF.

[ABOUT]: About Porcelain furnace.

[BACK]: Back to main interface.

7.8 VACUUM TEST



Press **[START]** to start vacuum test.

Notice before the test must up the pan upper.

If the time run out 60 sec the vacuum more than 90% is qualified, or not the test failure.

Press **[STOP]** to STOP vacuum test.

7.9 TEMPERATURE FIX

TEMPERATURE CORRECTION



Temperature adjustment automatically before every firing procedure. But we still provide manual methods of temperature correction.

Fix value 200 as the center, to increase this number means that reduce the actual temperature, reduce this number means increasing the actual temperature, usually this value is 200 .

Press [**SAVE**] to save temperature fix.

Press [**BACK**] to back to main interface.

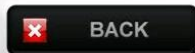
7.10 IDEL TEMPERATURE

IDLE TEMPERATURE

ONLY FOR GLAZE/CRYSTALLIZATION
AND CERAMIC



500



Idle temperature is Porcelain furnace not in firing ,a temperature value user hope to it static.



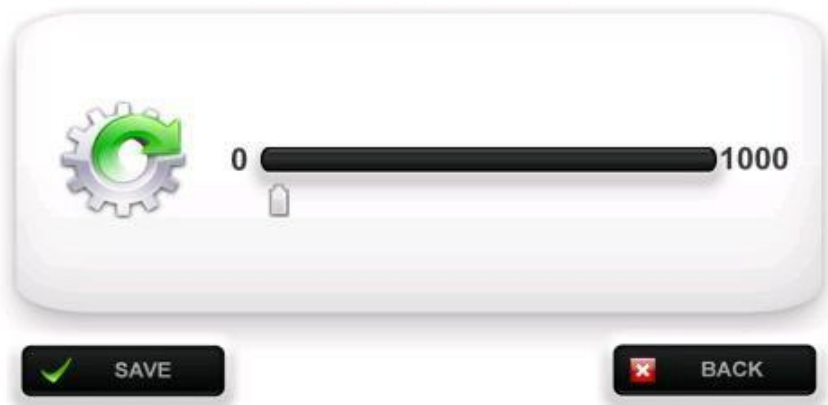
The vacuum test will switch off the heating, The temperature may reduce when the vacuum test is completed, this is a normal phenomenon, will be restored after some time.

Press **[SAVE]** to save idle temperature.

Press **[BACK]** to back to main interface.

7.11 MOTOR SPEED

MOTO SPEED



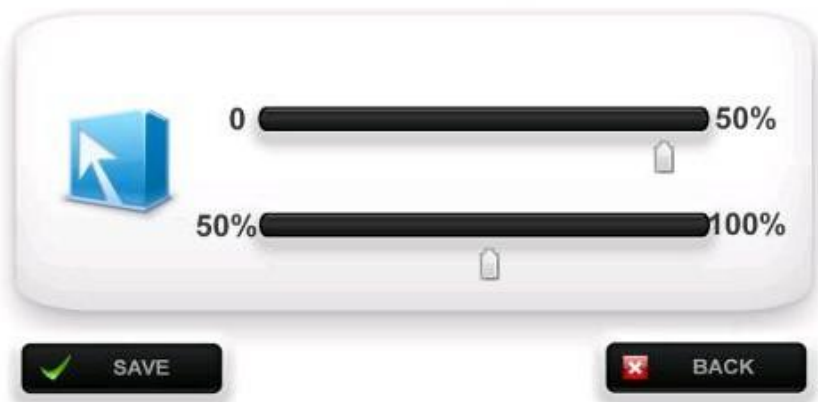
Pan speed set.

Too fast or too slow will cause noise.

Press [**SAVE**] to save motor speed.

Press [**BACK**] to back to main interface.

PALLET POSITION



Starting the program, in the Pre-dry stage, the pan will up two times , this set are two up position.



This tow parameters is very useful for steam Pre-evaporation,adjusted according to practical experience required.

Press **[SAVE]** to save Pan position.

Press **[BACK]** to back to main interface.

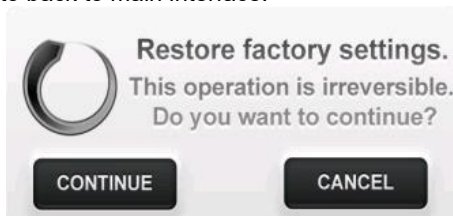
7.13 RESTORE FACTORY

FACTORY SETTINGS



Press **[RESTORE]** to restore to factory setting .

Press **[BACK]** to back to main interface.

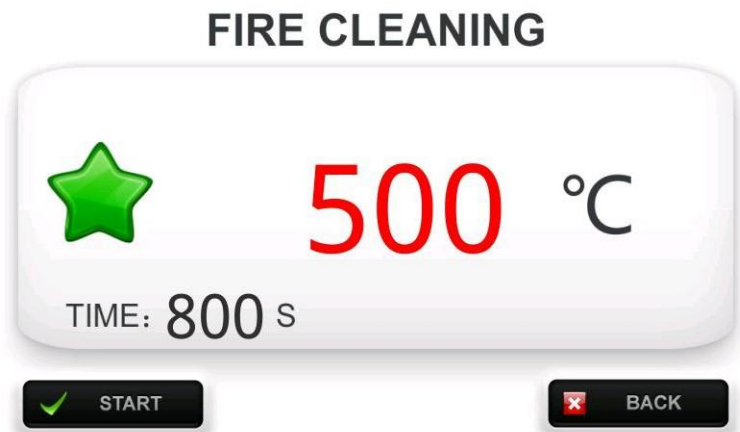


Press **[RESTORE]**A dialog box will pop up for asking the user continue or NOT,press **CONTINUE** to restore the factory data.**CANCEL** to abort.



This operation will restore all parameters back to factoryset.

7.14 CLEAN MODE



Press **[START]** to start clean mode .

Press **[BACK]** to back to main interface.

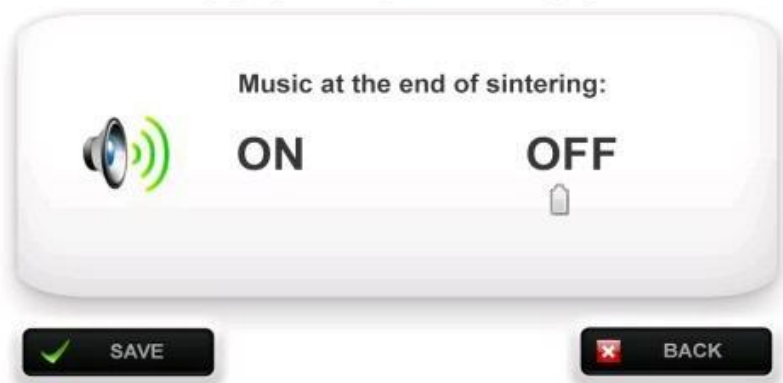
User must placed the activated carbon on the pan,then up the pan upper.



**User must proper treatment the activated carbon which is used,
discarded will occurrence fire.**

7.15 SOUND

SOUND SETTINGS



Use the scroll bar select sound ON or OFF.

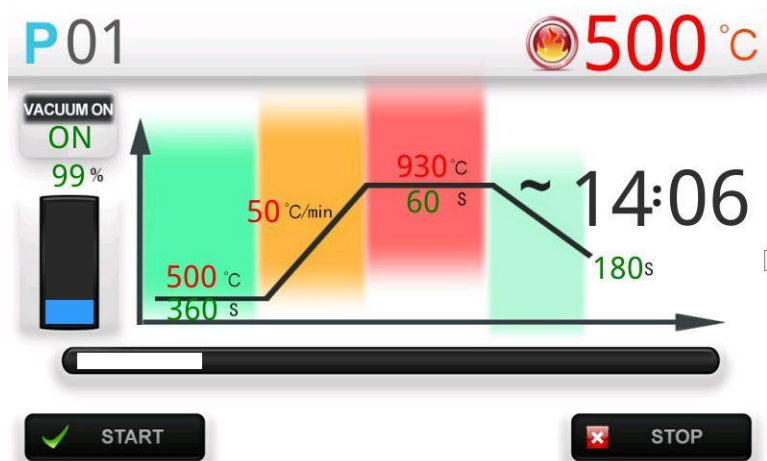
Press [**SAVE**] to save sound statu .

Press [**BACK**] to back to main interface.

7.16 ABOUT

Contains the version dates and other information.

7.17 START A 1 STEP FIRING PROGRAM



Press **[Firing]** in 1step firing interface,press **[START]** to start a 1 step firing program,the current firing program number which is the Program ID display number, pan will automatic down to the bottom, after ,you can put the porcelain teeth in the firing pan, It will automatically complete the firing process.

7.18 START 2 STEP FIRING PROCESS



When the system is in **standby mode**, press “**2 STEP/GLAZE**” button to enter the **2 STEP** interface. At this time. After placing the glass, press **[start]** to start a **2 STEP** process. The “**VACUUM**” position shows the **VACUUM** status.

7.19 STOP A FIRING PROGRAM

When a firing program is running, press **[STOP]** to stop a firing program, system will back to the main Interface and temperature will stable at stand by temperature when the program end.

8. TROUBLE SHOOTING

In case of the following fault, please contact customer service:

- Hardware failures: Memory chips ,real time chips,or the other problem, Power off to restart.
- Temperature failures: After start up,the display of temperature too large,or temperature too small.may be the thermocouple damage cause the Porcelain furnace temperature display too hot or toocold.for this ,please turn off the power and restart,then to cheak out the temperature control.
- The parameters value for program may beyond the Max value,the Factory Settings of max temperature cannot exceed 1200 (units °C), vacuum value cannot exceed 110 (%), time can not exceed 9999 (S), limit temperature cannot exceed 1000 (°C).

Vacuum pump troubleshooting:

- Check the connection of vacuum pump tube with furnace connector. Check the vacuum Power Fuse. Detection the moisture inside thefurnace.
- Start vacuum testing, check the pump on or off
- Confirm vacuum pump power plug connect Porcelain furnace socket
- Check vacuum tubes road leaks.
- Check on the platform of the furnace whether o-rings have crack, or particles may cause leakage, check with cooperate of surface.
- Use external instrument check vacuum pump value

If vacuum pump without problem , Follow the following solutions:

