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DUOTROn

- Press & Ceramic Furnace EX-5100

Operating Instructions



Make sure you carefully read this product manual before using product

Product Warranty is included at the back of this manual

!

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1. Introduction

Thank you for purchasing the EX-5100 for your porcelain needs. You are now the proud owner of one of the top quality porcelain furnaces available in the market today. This oven has been designed to optimize your firing process of your porcelain units.

This Operators Manual will explain the installation and operation of the oven as well as help you get the most out of your new EX-5100. Please carefully read the instructions in this manual for the best user experience.

Please ensure that all safety information has been read by the operator before using the oven. The Safety information is divided into two sections: Warning and Caution as described below:



Warning

Violations of instructions may cause increased risk of serious injury or death.



Caution

Violations of instructions may cause increased chance of material waste or injuries.

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Warning

1. Do not disassemble, repair or modify any part of the machine without prior approval from an authorized technician.

2. Ensure the oven is properly grounded.

3. Do not cut or modify the power cord. Do not handle the power cord in a manner that may cause damage to the cord.

4. Keep flammable material away from the oven at all times.

5. Keep liquid away from the oven and avoid using the oven in a damp environment to prevent electrical hazard.

6. Ensure that the power plug is firmly plugged into the proper section.

7. Always wear heavy thermal insulated gloves when handling units. Do not open the oven door during operation.

8. Always ensure that the oven is completely stopped before working with the oven and only operate the door when the machine is not in a cycle.

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Caution

1. During machine operation please avoid using the oven functions to prevent accidental stoppage or modification to the programs.

2. Please handle the oven carefully to avoid damage. The furnace contains fragile parts.

3. Do not use in places with a lot of vibration.

4. Please wear proper safety equipment before handling the oven (ie. Wear insulated gloves or use tongs when handling hot trays and wear goggles when handling insulation chamber material).

5. Please read the manual and understand the instructions before using the oven.

6. Insulation chamber may crack after repeated usage due to the nature of the material. If severe cracking occurs, discontinue use of the oven and replace the insulation boards to prevent heat damage to sensitive equipment.

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2. Product Information

(1) Features

- ▶ 7" TFT LCD High quality display
- ▶ Touch screen capability
- ▶ Vacuum pump capability
- ▶ 900 customizable settings
- ▶ Customizable cooling settings

(2) Display Feature

- ▶ User defined programs
- ▶ Progress graph
- ▶ Cleaning cycle available
- ▶ Easy to upgrade programs
- ▶ Custom settings back up capability
- ▶ Vacuum pump test capability

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3. Technical Data

Temperature Sensor

Sensor Type	Thermocouple K-type
Sensor Range	0~1200℃

Main Controller

Voltage	DC 5V
Display	7" TFT LCD (Touch screen capability)
Control(RS-232)	1 Ch. : I/O Controller
USB	1 Ch. : USB port for updates and memory

I/O Controller

Voltage	DC 12V
Output	2 Ch. : Transformer, Fan
Input	2 Ch. : Door input, Reserved
Control(RS-232)	1 Ch. : Main Controller

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General	
Voltage	AC 230V, 50/60 Hz
Dimensions	270(W) x 380(D) x 750(H)
Temp Range	+2℃ ~ +35℃
Fuse	10A / AC250V
Max. Current	6A
Socket-Outlet	AC 230V, 50/60Hz, Max 300W
Chamber	Ø 90mm x 64mm
Oper. Temp	+2℃ ~ +35℃
Oper. humidity	<80%
Max Temp	1200℃ (Do not holding for more than 2 minutes)
Weight	27kg

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4. Installation

1. Verify 230VAC power source prior to using this product.

2. Avoid direct sunlight and high humidity as site of installation.

3. Be sure the surface is clean and level before placing the oven.

4. Allow at least 1 ft of space around the oven in all directions for safe operating platform.

5. Water may accumulate in the air exhaust port during operation. Do not place any electrical appliances near the hose and it is recommended that a cup is placed to catch the water.

6. External vacuum pump should be used only external socket- outlet, AC230V, 50 / 60Hz, please use the vacuum pump under Max 300W

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5. List of Parts

(1) List of Parts

1. Furnace housing
2. Firing Tray
3. Air Ventilation opening
4. USB port for program upgrades
5. Touch Screen Monitor
6. Lower Housing
7. Firing chamber
8. Furnace Backing plate

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6. Front Panel Information

(1) Display



1) Time and Mode display

09:25

2012-02-28 :: Main

① Displays current time and date.
Can be changed by double tapping it.

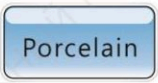
② Displays the current mode.
Ex) Company 1

2) Temperature Display



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(2) Button Explanation

Button	Explanation
 	기본 셋팅 값은 Porcelain 입니다. 프레스 진행 시 누루시면 Press 로 바뀝니다.
	리프트를 위로 이동 합니다. ● 리프트 이동 중 누르면 Stop 되며, 다시 누르면 기존의 동작을 실행함 리프트 위치가 정상에 위치하면 Lift Down 으로 변경됨
	리프트를 아래로 이동 합니다. ● 리프트 이동 중 누르면 Stop 되며, 다시 누르면 기존의 동작을 실행함 리프트 위치가 하단에 위치하면 Lift Up 으로 변경됨
	1 번 클릭 : Power Save Mode 실행 2 번 클릭 : Night Mode 실행 3 번 클릭 : 원래의 Firing Mode 로 돌아감
	Enters setup menu
	If the button is pressed (Button highlighted in red): When the "Start" button is pressed the oven immediately starts the program If the button is not pressed (Button not highlighted): When the "Start" button is pressed the oven will verify that the chamber temperature is at the "pre dry" temp before starting the program
	Available when the lift position is not at the ready position: Lowers the tray to ready position to allow user to place units in the oven
	Starts the program. Does not function if no program is selected

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(2) Button Explanation

Button	Explanation
	Stops current running program
	Indicates if elements are active
	Indicates lift position
	Indicates if vacuum is functioning
	Shows menu page
	Change name of the program
	Returns to last menu
	Plays the music (mp3 format) contained in the "music" folder
	Stops the music playing

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7. Programs setting

To change the name of the program press the tool button ( ) and then press the mode button (Material 1)

Type the name of the new program then press the OK button.

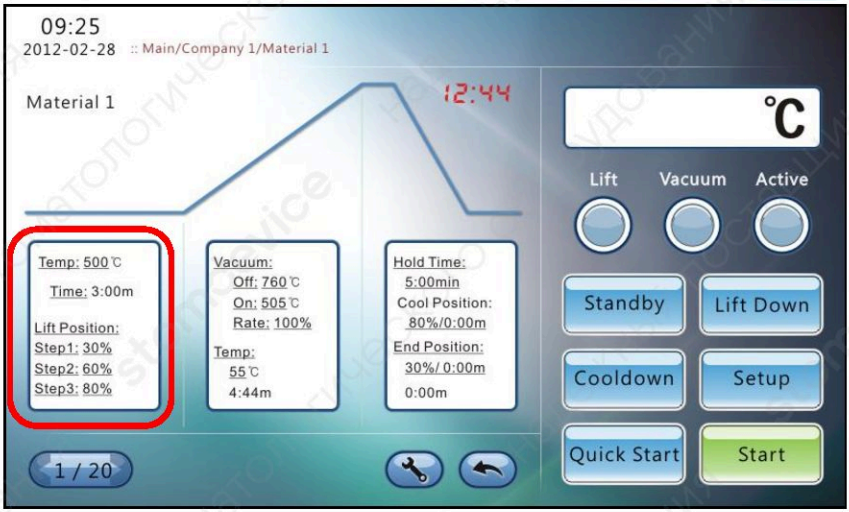


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8. Temperature Setting

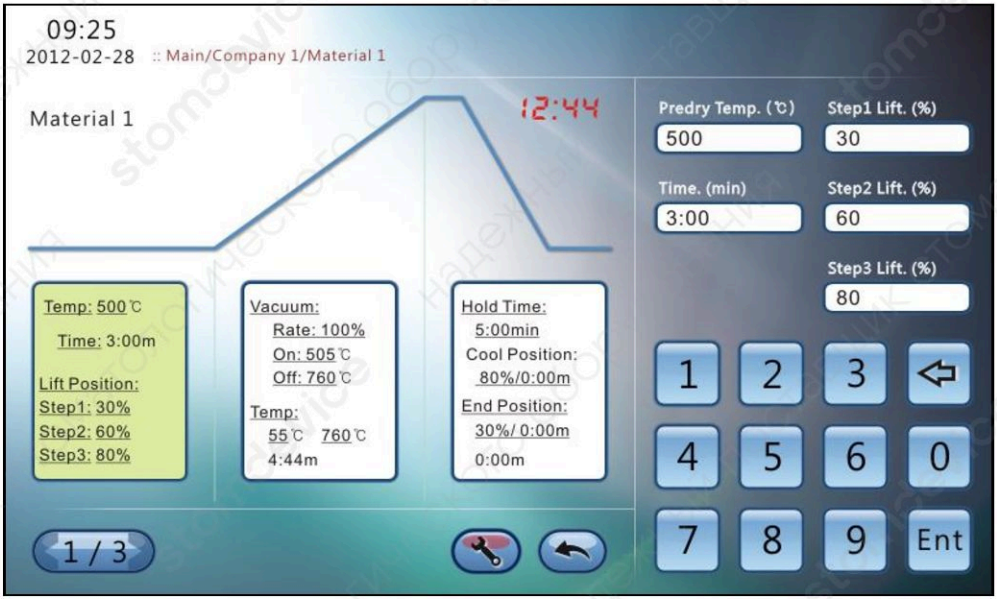
(1) Pre Dry Setting

① To change the temperature and time settings for the selected cycle press the change settings button ( ) then press the temperature list button( ).



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② The List will highlight and menu will be available to the right as shown below.
Use the right side numbers to change the desired settings and then press the enter key(Ent) to save the change.



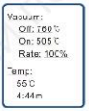
- Predry Temp. (℃) 500 : Set pre-drying temperature (ex : 500 = 500℃)
- Time. (min) 3:00 : Set pre-drying time
  - ◆ Set time will be divided equally and the lift will work with the divided time at each step.
- Step1 Lift. (%) 30 : Set a height of the lift at the first step.
- Step2 Lift. (%) 60 : Set a height of the lift at the second step.
- Step3 Lift. (%) 80 : Set a height of the lift at the third step.

<After input each setting value, click (Ent) button will save the value>

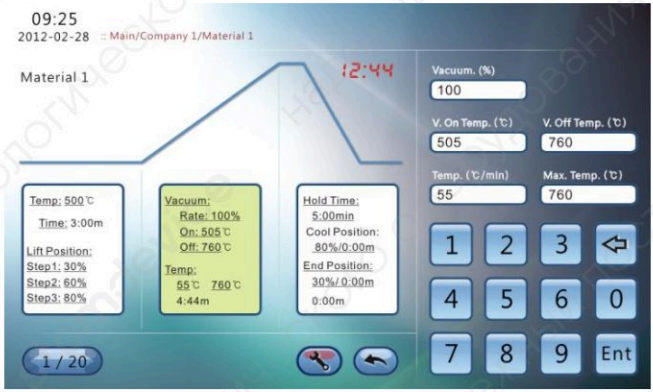
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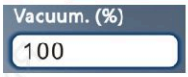
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(2) Temperature and vacuum settings

① To change the temperature and vacuum settings press the temperature list button().

② Change the desired temperature and vacuum settings listed below and then press the enter key(Ent) to save.

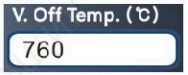


- 

: Setting the strength of vacuum (ex : 100 = Full Vacuum)

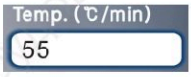
- 

: Setting the turn a vacuum pump on temperature

- 

: Setting the turn a vacuum pump off temperature

  - ◆ To turn off the vacuum pump during the hold, 'V. OFF Temp. (°C)' should be 1 °C lower than a target temperature.
  - ◆ To turn on the vacuum pump during the hold period, 'V. OFF Temp. (°C) should be same as a target temperature

- 

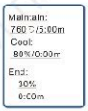
: Setting the temperature increasing rate

- 

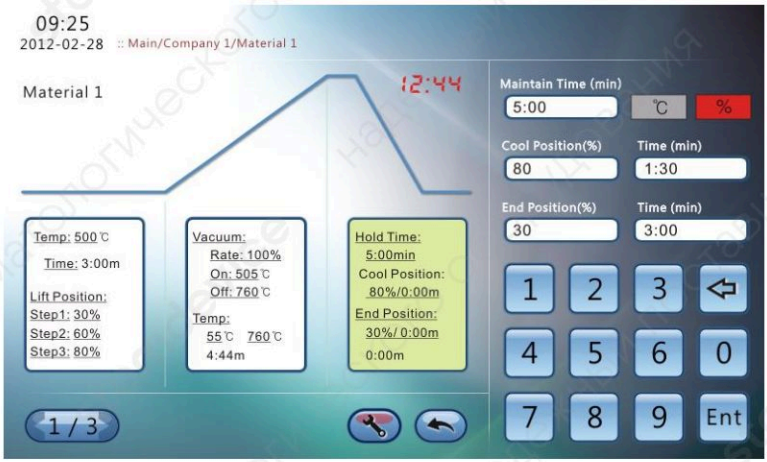
: Setting the maximum firing temperature.

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(3) Hold time and cool down time settings

① To change the hold and cool down time settings press the temperature list button().

② Change the desired settings listed below and press the enter key(Ent) to save.



③ To return to the main menu press the return button( ).

④ Maintain time button ℃ % allows you to choose the cooling condition as a temperature or percentage.

- ℃ : Allows you to control the cooling according to the rate of cooling (temp/min). The oven lift will slowly lowered to match the desired rate of cooling.
- % : Allows you to control the cooling by directly controlling the position of the door. The door position will be in terms of position (100% for closed position and 0% for completely open position).

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(4) Set Hold Temperature and Cool Down [%]

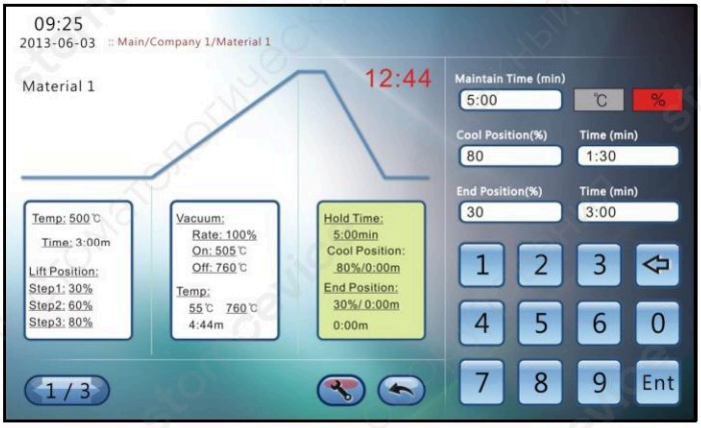
① To set hold temperature and cool down, click the temperature list button ().

② As the picture below, input the value of the maximum temperature, holding time and cool down position at the setting window and click enter button (Ent) to finish input.

③ To go main menu, click ( ) button.

④ [℃] [%] button on the Right side of hold time can control cooling rate with temperature and position

◆ Select [%] button : Cooling control with a positions of lift and hold time

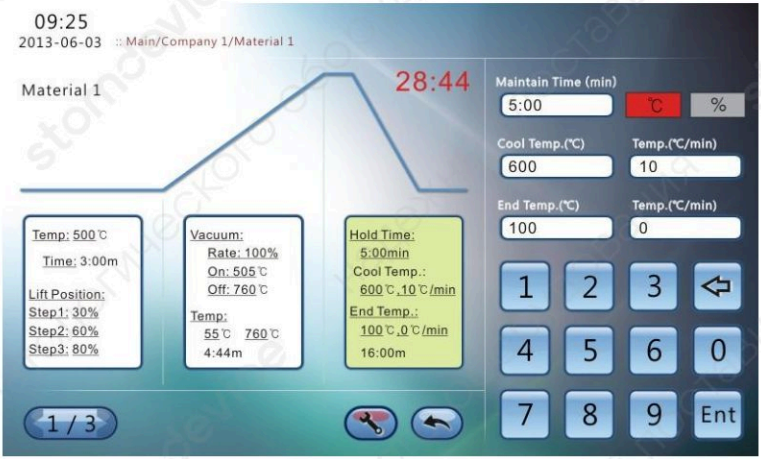


- Maintain Time (min) 5:00 : Setting hold time (ex : 1:00=1 min. hold, 0:00= It will not be hold)
- Cool Position(%) 80 Time (min) 1:30 : 1st lift down position and hold time
- End Position(%) 30 Time (min) 3:00 : 2nd lift down position and hold time

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(5) Set Hold Temperature and Cool Down ℃

◆ Select ℃ button : Cooling will be controlled by 2 steps with a set temperature and a temperature decreasing rate.

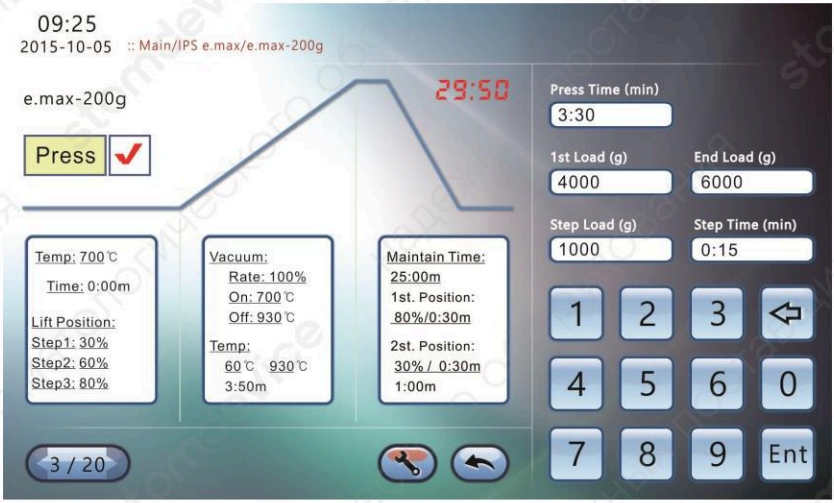


- Maintain Time (min) 5:00 : Set hold time (ex : 1:00=1 min. hold, 0:00= It will not be hold)
- Cool Temp.(℃) 600 Temp.(℃/min) 10 : Set the 1st target temperature and temperature decreasing rate.
- End Temp.(℃) 100 Temp.(℃/min) 0 : Set the 2nd target temperature and temperature decreasing rate

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(6) Set Load

To change a press time and a load on a press cycle, click ( ) button and then, click ( ) button and click(Press) button.



- Press Time (min) 3:30 : Sett press time (MM : SS)

  (ex : 100g ring = 3:00 press, 200g ring = 2:30 press)

- 1st Load (g) 4000 End Load (g) 6000 : Set load (Kg unit, ex:23.0kg)

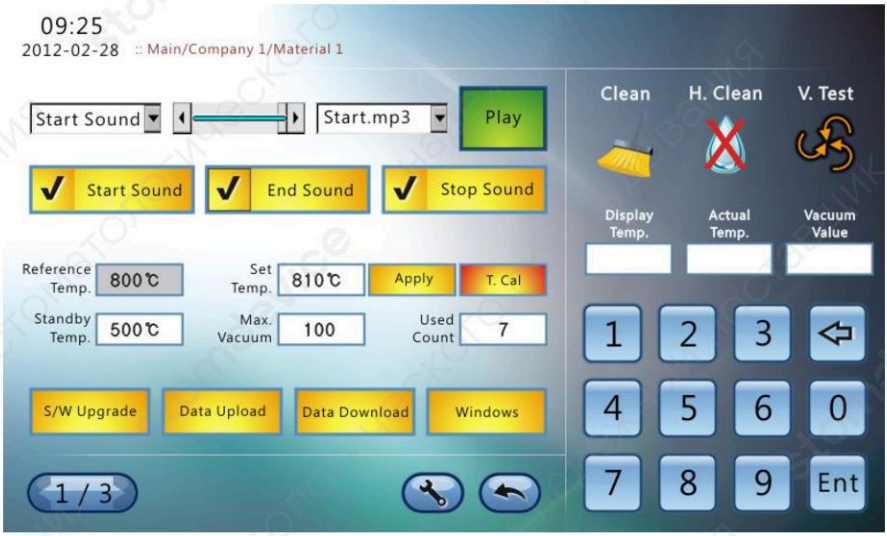
- Step Load (g) 1000 Step Time (min) 0:15 : Set load increasing rate (Increase load in Kg per each step, ex:1.0kg per 15 second)

  (Set increasing time : MM : SS, 0:15 = each 15 seconds, load will be increased by a target step load)

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9. Oven Setting Setup

① Press the setup button to enter setup menu (Setup).



< 버튼 설명 뒷면 참조 >

- Standby Temp. : Set standby temperature as 500℃, or set 50 oC lower than a drying temperature of a powder
- Wrong value of standby temp. : Pop up error message "Low temperature error!"

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(1) Button explanation

Button	Explanation
	Music function keys: Play, Start, end and Stop sound.
	Adjust the set temperature. This setting will be changed after running calibration Caution: Adjusting temperature can affect the quality of the parts (Especially lowering the temperature)
	Used to verify the internal temperature of the oven (Place the silver wire in the test block and run the program)
	Standby Temp.: Normal standby temp Vacuum Rate : Strength of vacuum *NOTE: Only adjust this value after consulting with a certified technician. This value has been calibrated prior to customer installation Used Count : Number of cycles run
	Software upgrade
	Allows data to be uploaded to USB
	Allow data to be downloaded from USB
	Goes to Windows OS screen
	Used for cleaning the furnace
	Used for eliminating humidity in furnace
	Vacuum test

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10. Operation

① Turn on the main power switch.



② Main menu will appear



*Power switch will light when in On position.

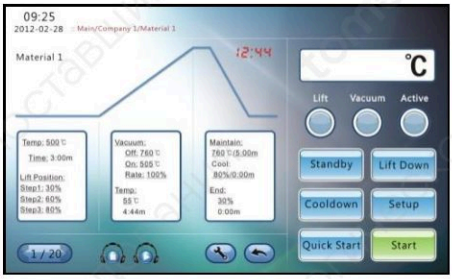
③ Press the Standby button to ensure tray is in proper



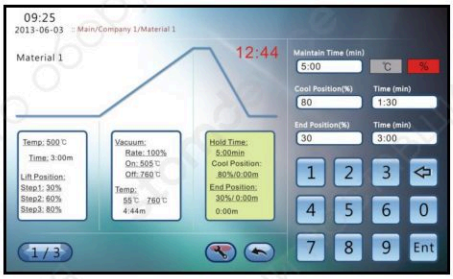
④ Select the desired company program position



⑤ Select the material type



⑥ Verify firing schedule

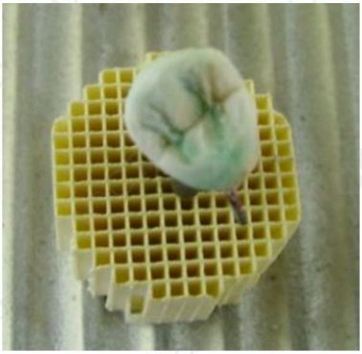


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⑦ Press Ready or Lift Down button

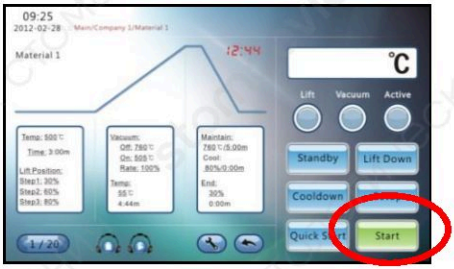


⑧ Place prepared units on the tray into oven

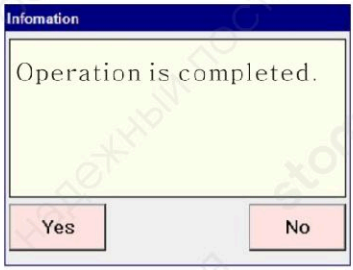


⑨ Press the Start button (

).



⑩ Once operation is completed notification will be shown.



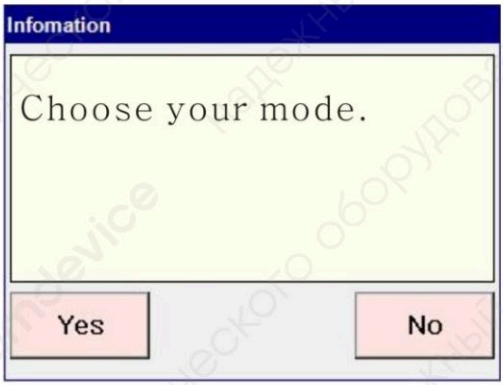
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11. Troubleshooting

These messages may appear during operation of the furnace

▣ **"Choose your mode."**

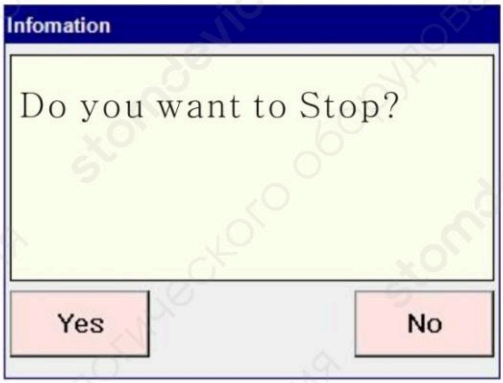
This message will appear if the "Start" button is pressed without choosing a mode first.



☞ Solution → Select desired mode before starting the furnace.

▣ **"Program is running. Do you want to finish the program?"**

This message will appear when the "Stop" button is pressed during a cycle.



☞ Solution → To stop the cycle press the "Yes" button. The oven will continue operation after 5 seconds if no buttons are pressed.

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▣ **"Insert USB Memory Stick!"**

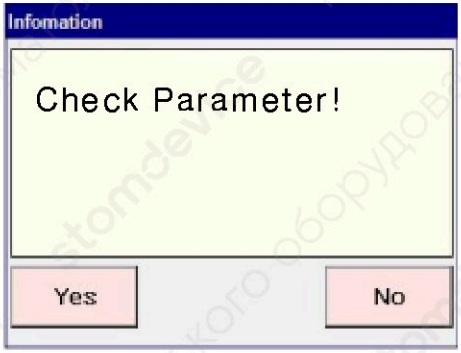
Have not insert USB drive or oven does not recognize USB drive.



☞Solution →After insert USB drive, wait 5 sec. Or use USB drive lower than 4g memory.

▣ **"Check Parameter!"**

Input wrong schedule.



☞Solution → Check sintering schedule. If the problem persists please contact a manufacturer for further troubleshooting.

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▣ "Communication Error"

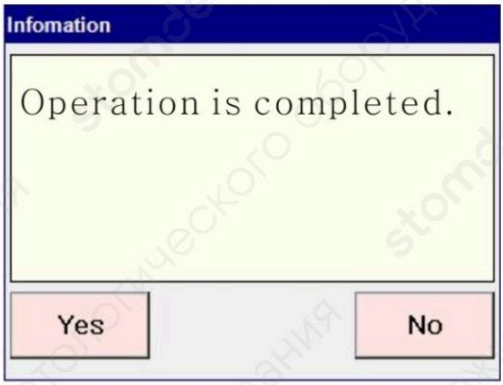
This message will appear when there is no communication between controller and the furnace for more than 10 seconds.



☞ Solution → Reboot the furnace. If the problem persists, contact the manufacturer.

▣ "Completed."

This message will appear when the cycle is completed.

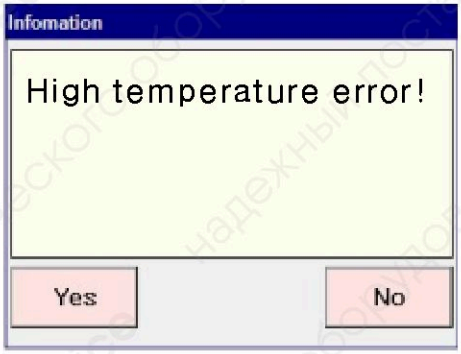


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▣ **"High temperature error!"**

Inside of the furnace temperature is over 1700 °C or damaged on thermocouple.

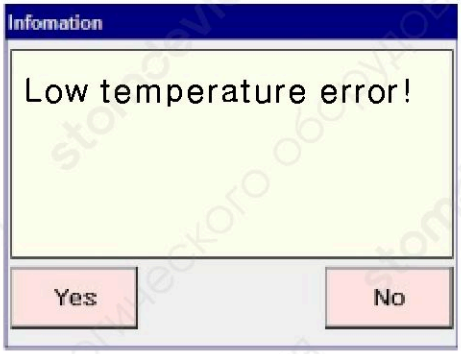
.



☞Solution →Check temp. setting / Replace thermocouple.

▣ **"Low temperature error!"**

Inside temperature of the furnace is not ramping up.



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12. Warranty

No.	Condition	Within warranty period	After warranty period
1	Within 10 days of purchase, require major repair by defect even though used in normal condition	Exchange or refund	
2	After 1 month of purchase, require major repair by defect even though used in normal condition	Exchange	
3	Manufacturer could not repair for a month from customer request to be fix	Exchange	Exchange + Charge for depreciation in price
4	Same problem occur 3 times	Free Repair	Repair + fee
5	Same problem occur 4 times	Exchange	Repair + fee
6	Within 6 month after repairing with charging fee, same problem occur	Repair without fee or refund repair fee	
7	5 times repaired by troubles in several parts, but detecting trouble again	Exchange	Repair + fee
8	Cannot be repaired although have the spare parts. (Within spare parts holding period)	Exchange	Exchange + Charge for depreciation in price
9	Cannot be repaired by out of parts (Within spare parts holding period)	Exchange	Exchange + Charge for depreciation in price
10	Incident due to operator error	Repair + fee	Repair + fee
11	Lost parts or products by manufacturer	Exchange	Exchange + Charge for depreciation in price
12	Damage in delivery	Exchange(Claim for damages to carrier)	
13	Lost or damaging parts during delivery from customer to manufacturer	Customer fault.	
14	Damage during the install by manufacturer	Exchange	Repair + fee
15	Any other quality issue	Additional progress	

♣ It is not manufacturer's responsibility that any loss of business while product is not working.

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WARRANTY CARD

To protect benefit of customers and official dears, Addins inc. assure product quality as follow

Warranty is void under these circumstances

- Modification not approved by authorized support technician
- Incident due to operator error
- Sales performed by unauthorized persons
- Oven not operated as outlined in the manual
- Damage caused by external sources such as power outage, fire, act of God, etc.
- Without a warranty

Fill out this warranty card and send to e-mail (addins@korea.com) or fax to 031-818-2072.
Without submitting this warranty card, warranty may not be covered.

Customer	Name			
	Phone			
	Address			
Seller	Company			
	Phone			
	Address			
Install date				
Serial No.		Warranty period		
Product Name				

Add-in | 주 | 에 도 인

Warranty Info

1. Warranty Length

Warranty is good for 1 year after purchase for malfunctions due to manufacturer defects

2. Warranty Exclusions

Warranty is void under these circumstances

· Modification not approved by authorized support technician
· Incident due to operator error

· Sales performed by unauthorized persons
· Oven not operated as outlined in the manual

· Damage caused by external sources such as power outage, fire, act of God, etc.

Warranty does not cover consumables such as trays or heating elements.

3. Miscellaneous

Sales must be invoiced to be eligible for warranty

Instructions

■ Avoid places of sudden and/or drastic temperature changes

■ Do not use flammable material for cleaning

■ Do not install near high voltage usage or voltage fluctuations

■ Avoid heavy shock to the machine

■ Do not place oven in direct sunlight or in place with heavy dusts

■ Store in dry places

■ Do not use in area with vibrations

* Product may contains differences in specs and/or parts from the manual upon arrival.

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DUOTRON

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