



User Handbook

Electric Top Loading Kilns For Ceramics
- Controller ST215 -

TEL: 0030 210 6220520, 0030 210 6220521
Email. info@bonis.gr



Dear Customer,

Thank you for choosing a kiln made by Bonis SA.

Your kiln is especially made for firing ceramics, it is a high performance product made by high quality raw materials, sourced from the best known European manufacturers.

It features high quality insulation for low power consumption.

This instruction manual includes all the important information and guidelines you will need to start using your kiln as safe and simple as possible.

Please read the instruction manual carefully, before the first operation and become familiar with the features and functions of the kiln and the controller.

Our team is always available to provide more information and help you in operating your kiln.

Your Bonis Team

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1. KILN SPECIFICATIONS

A label with all kiln specifications is placed on the kilns control panel.

 BONIS High Temperature Kilns  Y.O.M. XXXX (1) Made in GREECE Technical Support: (0030) 210 6220520 WWW.BONIS.GR	TYPE	XXXX (2)
	S/N	XXXX (3)
	T max	XXXX (4) °C
	Load	X (5) kW X (6)
	Supply	XXXX (7)
		XXXX (8)

1. Year of manufacture
2. Type
3. Serial Number
4. Maximum temperature
5. Installed power - Kw
6. Amper (for single phase kilns)
7. Plug type / Power supply
8. Amper per phase (for three phase kilns)

2. SAFETY INSTRUCTIONS

2.1 Sign recognition



Warning
HIGH VOLTAGE



Warning
DANGER



Warning
HOT SURFACE



Warning
RISK OF FIRE



Declaration of Conformity

This kiln is manufactured in accordance with EC directives

Copyright by BONIS SA

No responsibility is accepted for the correctness of this information.
We reserve the right to make technical alterations.

2.2 KILN PLACEMENT



- Do not place the kiln on a flammable table / floor
- Place the kiln on an even surface
- The distance to the walls should be at least 25 cm
- Do not place / store any flammable materials close to the kiln.
Always have a safety distance of 50cm from the kiln.
- Do not store flammable liquids / gas in the same room with the kiln.
- Place the kiln in a well ventilated area. If this is not the case a ventilation system has to be installed.
- Place the kiln in a place that is protected from water / rain



- Place the kiln in a room where kids and pets have no access.

3. CONNECTION TO POWER SUPPLY



Kiln connection to power supply must be completed by a certified electrician.

Do not attempt to connect the kiln by your self if you are not a certified electrician.



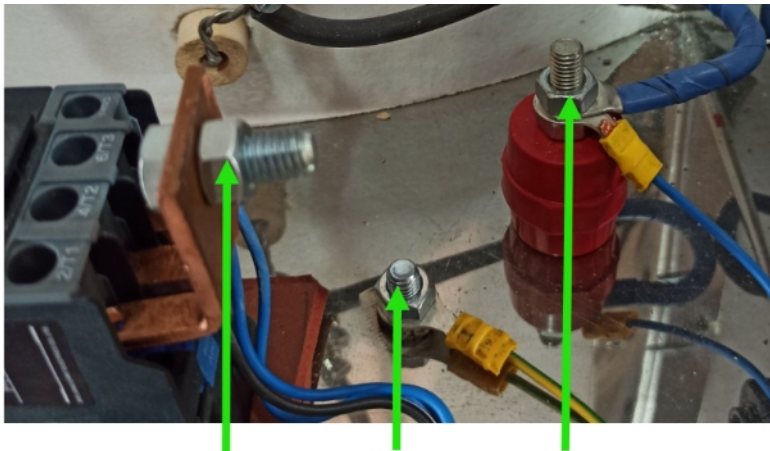
Before proceeding to connecting the kiln please make sure that power supply is OFF

CONNECTION TO SINGLE PHASE POWER SUPPLY

To Connect the kiln in a single phase supply, you will have to use the copper "bridge" provided with the kiln. The supply cable is then connected to the "bridge"

Neutral is connected to the red insulator.

Ground cable is connected to the yellow screw



POWER SUPPLY

GROUND

NEUTRAL



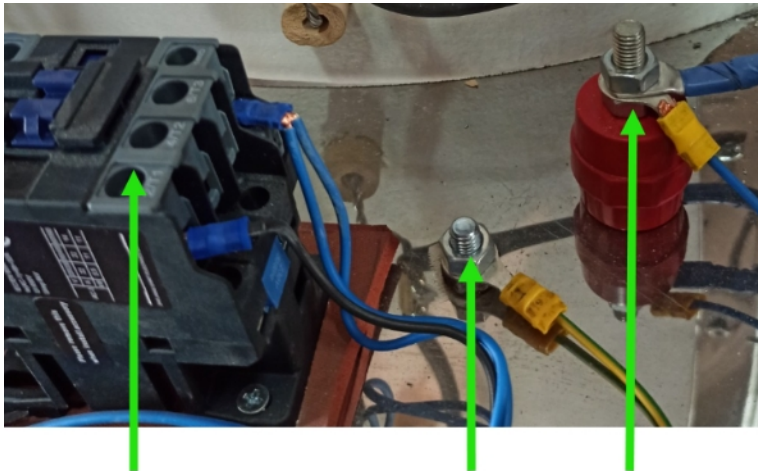
Copper Bridge is used to bridge relay contacts 2/T1, 4/T2 and 6/T3.

CONNECTION TO THREE PHASES POWER SUPPLY

To Connect the kiln in a three phase supply, you connect phase one to relay contact 2/T1, phase two to 4/T2 and phase three to 6/T3.

Neutral is connected to the red insulator.

Ground cable is connected to the yellow screw



POWER SUPPLY

GROUND

NEUTRAL



Connect phase one to relay contact 2/T1, phase two to 4/T2 and phase three to 6/T3

4. ABOUT THE KILN

4.1 Knowing your kiln



1. Exhaust air

Kiln features an exhaust air hole on the center of the lid. This hole must be always open.



WARNING: Hot air will come through the hole.

2. Lid safety support

Three position lid support. In the two lower positions the lid support keeps the lid open.



The third position, is a quick cooling position. It keeps the lid open for few centimeters, and it helps the kiln to cool faster.

Fast cooling can be done when the kiln temperature is below 100C.

CAUTION:

Kiln handle may be hot

Hot air may come out from the kiln

3. Kiln stand

Kiln features a metallic stand. You must always use the kiln while it is on the stand. **DO NOT PLACE THE KILN ON FLAMMABLE FLOOR**

4. Lid closure

You must always close securely the lid closure before starting a firing. Do not use the kiln with the lid closure unsecured.

5. Bottom closures

All bottom closures must be always secured.

6. Kiln handle and bottom handles

Both kiln handles and bottom handles are to be used during transportation of the kiln, **ONLY IF** the kiln is disassembled. Do not lift the assembled kiln from kiln handles or bottom handles.

Please note:

In case you need to move the assembled kiln, lift it from the kiln stand. Please ask for the kiln dis assemble manual if you need to move the kiln.



Do not move the kiln while it is connected to the power supply

Do not move the kiln with the lid open

7. Main Switch

Kiln power switch. When the kiln is not firing, main switch must be to OFF position

8. Heating Element Operation Light

This indication light will light on during firing ONLY when the heating elements are working.

During a firing this light will switch OFF and ON indicating the heating elements operation.

Please note: Kiln type **MK20** and **MK45** do not feature this indication light. Instead a red indication light is placed in the main switch.

9. Panel safety box - 6A

10. Controller plug

Controller is connected to the kiln by a simple plug and play plug. Controller connection can be done by the kiln user with no danger.

Before connecting the controller please make sure that the kilns main switch is OFF



4.2 Transport of kiln

In case you need to move the assembled kiln, lift it from the kiln stand.

Do not lift the assembled kiln from kiln handles or bottom handles.



Do not move the kiln while it is connected to the power supply

Do not move the kiln with the lid open

Kiln handles and bottom handles are to be used during transportation of the kiln, ONLY IF the kiln is disassembled.

Please ask for the kiln dis assemble manual if you need to move the kiln.

4.3 Kiln Operation



Before operating the kiln please make sure that there is nothing flammable inside the kiln.

Please make sure there are not any cables or other flammable materials close or in contact with the kiln.

When loading unloading the kiln the main switch must be OFF.

Do not place in the kiln any material with unknown reaction to firing.

Do not move the kiln while in operation

Do not open the kilns while in operation

Always open the kiln after cooling down to 50C

Do not place flammable objects in the kiln.

Note At high firing temperatures a slit may become visible along the edge of the lid. This is normal and does not compromise the kiln's function or safety.

**This kiln is EXCLUSIVELY for firing ceramics ONLY.
Any other use is prohibited.**

**In case of malfunction please switch OFF the main switch,
and cut off the power to the kiln**

DO NOT ATTEMPT TO FIX ANY PROBLEM BY YOURSELF.

PLEASE CONTACT OUR TECHNICIANS, OR A LOCAL CERTIFIED
ELECTRICIAN.

4.4 Maintenance



Before proceeding to any maintenance or service operation Kiln main switch must be OFF, kiln must be unplugged or safety switch must be OFF

1. Kiln chamber must be kept clean, and any broken ceramic pieces must be taken out carefully. You can use a vacuum cleaner to clean the chamber.
2. Use a vacuum to clean kilns lid (inside) from time to time.
3. Before starting a firing inspect all cables for any kind of damage. In case of damage, do not use the kiln before replacing the damaged cables.
4. Inspect thermocouple connections and cables that are properly placed and free from any kind of lesions.
5. Heating elements must be kept clean, and any piece from broken ceramic, glaze etc, must be taken out before using the kiln. You can use a vacuum cleaner to remove particles from the heating elements. Please not that when cold, heating elements are extremely brittle

4.5 Insulation

The kiln insulation is made from high-grade fireproof material. Due to thermal expansion, cracks in the insulation will occur after a few heating cycles. These have no influence on the function, safety or quality of the kiln.

The refractory bricks (insulation) are of a particularly high quality. Due to the manufacturing process small holes or cavities may occur. These are quite normal and underline the quality features of the bricks.

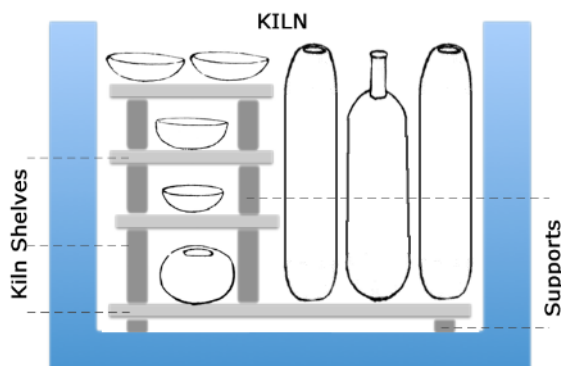
5. USING YOUR KILN

Before using your new kiln please make sure you fully read and understand the complete kiln operation manual

5.1 Kiln shelves

Kiln shelves are available as whole, or half (depending on your kiln size whole shelves may not be available)

Placing two half plates will make one whole shelf, or you can load half of the kiln with plates as shown in the below image

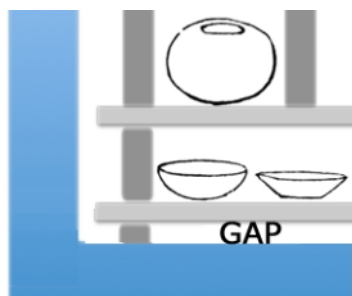
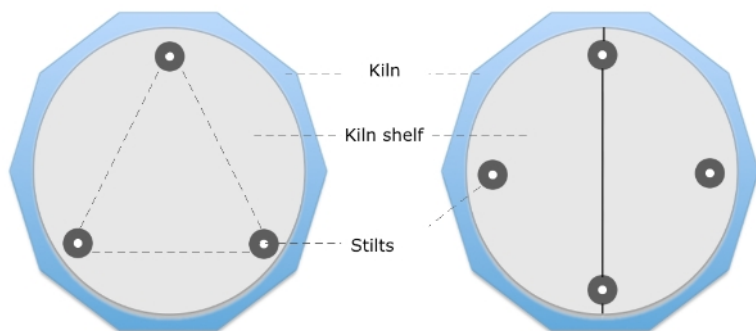


Kiln shelves must be smaller from the kiln interior diameter, as you need a gap between the shelf and kiln wall, for your hand to fit in, and for the hot air to circulate evenly.

Supporting kiln shelves

We advise you to support whole kiln shelves in 3 points.

Always position the stilts one above the other for each layer, to avoid kiln shelf deformation or cracking.



Please Note:

You must always leave a gap between kiln floor and the first kiln shelf.

You must place small stilts, or pieces of broken kiln shelves on the bottom of the kiln, and you first kiln shelf will be placed on top of these stilts.

5.2 Kiln loading

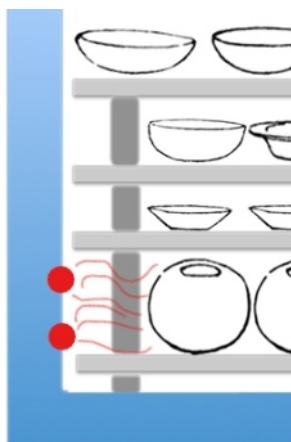
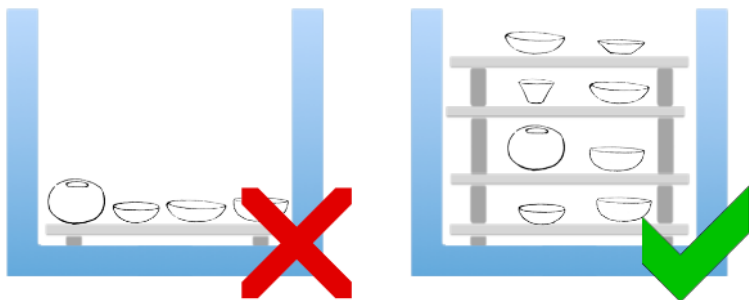


During loading / unloading of the kiln, the main switch must be OFF, the kiln must be unplugged from power, or the power switch must be also to OFF position



Make sure the lid is well supported before loading / unloading the kiln.

To enhance even temperature distribution we strongly suggest to load your kiln evenly.



Please Note:

In top load kilns it is recommended not to place low height ceramics on the bottom shelf.

We strongly recommend to place medium height ceramics on the bottom shelf (approximately 5cm or more)

If you place low height ceramics on the bottom shelf you must use stilts of bigger height to have the required gap for firing properly your ceramics.

5.3 Kiln Cooling

Your new kiln features a multilayer insulation, which ensures minimum heating loss, and very slow cooling.



To cool the kiln faster you can use the quick cooling position of the kilns lid support.

This position keeps the lid open for few centimeters, and it helps the kiln to cool faster.

Fast cooling can be done when the kiln temperature is below 100C.



CAUTION:

Kiln handle may be hot

Hot air may come out from the kiln

5.4 Kiln unloading



During loading / unloading of the kiln, the main switch must be OFF, the kiln must be unplugged from power, or the power switch must be also to OFF position



Make sure the lid is well supported before loading / unloading the kiln.

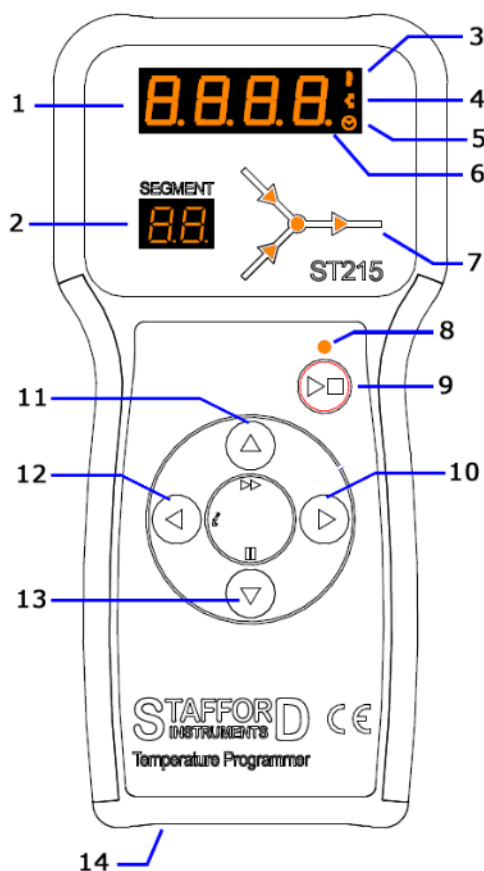
CAUTION: Ceramics may still be hot during unloading

6. Controller ST 215

6.1 Controller ST215 Features

- Multiple programs each with multiple segments
- 1 controlled heating / cooling ramp + soak per segment
- Soak times up to 99 hours 59 mins
- Ramp rates from 1 to 999°/hour + FULL
- Ideal for glass or ceramics use
- Programs can be altered while firing
- Program pause and advance facilities
- Keyboard lockable
- Delayed start facility - up to 99 hours 59 mins
- Power failure recovery
- Energy used display
- Setpoint display
- Alarm buzzer & alarm output
- °C/°F operation

6.2 Controller overview



1. Main display	8. Firing indicator
2. Segment display	9. Start / Stop ►■
3. Temperature 🌡️	10. Selection button ►
4. Heating rate <	11. Up button ▲
5. Soak time 🕒	12. Return button ◀
6. Heating element operation	13. Down button ▼
7. Mimic display	14. Main switch

6.3 Turning On



When turned on the ST215 performs a display test by lighting all of the display segments and illuminating all of the front panel indicator lamps.




The version number of the software embedded within the ST215 is now displayed. If you need technical support you might be asked for this code together with the serial number.



Next displayed is the thermocouple type setting. This should match the type of thermocouple fitted to the kiln and can be S for 1300C, or K for 1200C



The final display will show the kiln temperature.
All other lamps should be off.

Next to the main display, temperature indication will light 

All other indications must be OFF

If any other indications are ON, press START/STOP ► ■

6.4 Quick Start Guide

Press button ► (arrow to the right)

Main display will show a program number



Use buttons ▲ or ▼ until display shows the desired program number

Press START/STOP ► ■

Main display will show the program start delay time (00.00) After 10 seconds program will start automatically



6.5 Firing Program

Controller ST215 can store up to 32 programs.

Each program can have up to 32 segments.

A firing segment comprises of a ramp rate (degrees per hour), the final segment temperature, and a soak period.

Two segments can be used for simple firing (biscuit firing for example) or several segments can be used per program for complex firing (crystal glazing or glass-making for example).

The ST215 ramps the kiln temperature at the required ramp rate until the kiln reaches the soak / target temperature It then soaks (dwells) at the soak temperature for the soak time. It then runs the next segment until the end of the program is reached.

The ST215 is capable of both positive (heating) ramps and negative (cooling) ramps - as used in glassmaking for annealing. The type of ramp is clearly shown on the mimic display during firing.

The ramp rate is settable in the range 1°C/hour to 999°C/hour or FULL (full power is for uncontrolled, fast heating. To enter full power you must increase heat rate to 1000°C/hour. Display will then show FULL).

Entering "0" as ramp rate will show "End" (end of program).

The soak / target temperature is settable over the range 0 to 1200 or 1300°C (depends on kiln model).

The soak time is settable over the range 00.00 (no soak) to 99 hours 59 mins.

Note: during soaking the ST215 display alternates every 5 seconds between kiln temperature and soak time remaining.



6.6 Program Samples

The below table shows three different programs:

NORMAL rate– The basic program, suitable for most ceramics

SLOW rate – Suitable for thick and large ceramics

FAST / GLAZE – Suitable for small thin ceramics, as well as for Glaze firings

	<				
	HEATING RATE C/h			SEGMENT FINAL TEMPERATURE	SOAK
SEG	NORMAL	SLOW	FAST GLAZE		hh.mm
1	60	40	80	250	00.00
2	100	80	120	540	00.00
3	80	60	100	600	00.00
4	150	120	150	*MAXIMUM TEMPERATURE	00.00**
5	END				

*Set the desired maximum temperature, according to your clay needs

** Usual soak time:

- Bisque 10 minutes (00.10)
- Glaze 20 to 30 minutes (00.20 – 00.30)

You can use this program template, and only **change the maximum temperature and soak time at segment 4.**

6.6 Entering a program



When not firing there are no indicators lit on the mimic panel, the run indicator is off and the display shows the current kiln temperature.

The controller settings can be reviewed by pressing the ► key.



The first push of the ► key flashes the program number display.

The required firing program can now be selected with the ▲ & ▼ keys.

Note: holding down the ▲ or ▼ keys causes rapid change of the displayed value

When the desired program number is displayed push ► to enter program values.



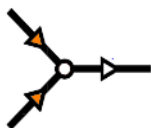
Small, segment display will show number "1" which indicates the first segment of the selected program.



Main display shows the ramp rate in the range End , 1-999°C/HR or FULL.

This can be altered with the ▲ & ▼ keys.

Next to the ramp rate reading the rate icon will flash <.



The heating ramp (▼) or the cooling ramp (▲) indicator on the mimic panel will flash.

If End is shown but another segment is required then push the ▲ key to obtain the required ramp rate (in the range 1°C/hr to 999°C/hr).

If FULL is shown but another segment is required then push the ▼ key to obtain the required ramp rate (in the range 1°C/hr to 999°C/hr).

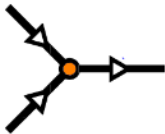
When the desired rate is set press button ►



Main display shows the segment final temperature.

This can be altered with the ▲ & ▼ keys.

Next to the temperature reading the temperature icon will flash 🌡️.



The soak temperature indicator on the mimic panel will flash (●)

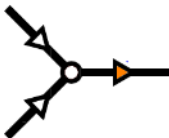
When the desired temperature is set press button ►



Main display shows the soak time in hours:minutes.

This can be altered in the range 00:00 (no soak) to 99:59 with the ▲ & ▼ keys.

Next to the time reading the soak icon will flash ⌚.



The soak time indicator on the mimic panel will flash (►)

When the desired soak time is set press button ►



The next push of the ► key increments the segment number digit and small, segment display will show number "2" which indicates the second segment of the selected program.

Follow this steps to enter as many segments as you need.



When all required segments are entered you must mark the end of the program.

To do that, push the ► key to proceed to the next segment.

Small, segment display will show the next segment number

Press ▼ key until END is displayed.

When END is displayed, to exit program data entry push ► key.

The display shows the current kiln temperature.

No indicators lit on the mimic panel and the run indicator is off

Note 1: to exit programming without cycling through all of the above steps wait 10 seconds without pressing any keys - the ST215 will revert to the idle display.

Alternatively press the ► ■ key to exit programming and to begin firing immediately

Note 2: the ◀ key can be used to reverse through the programming steps to correct errors or to exit programming mode.

Note 3: If the controller remains idle for 10sec it will automatically exit the programming mode. Any changes made are automatically saved.

6.7 Altering, Reviewing a program

To Alter/ Review a program we follow the same procedure as entering a new program.

6.8 Program Start

To start a program press the ► key.



- ! A program number will be displayed.
- ! The required firing program can now be selected with the ▲ & ▼ keys.
- !

When the desired program number is displayed push ►■ to start



Display will show program start delay time

After 10 seconds, or immediately if the ►■ key is pressed again, the firing will commence and the firing indicator lamp will remain lit.

To stop the firing prematurely at any time press the ►■ key again. The firing indicator lamp will go out.

6.9 Program start delay time

You can program your kiln to start firing at a future time, when you will not be in your studio to start a firing.

Program start delay can be up to 99 hours: 59 minutes, and it is programmed when you select to start a firing.

Note: Delayed time is AFTER how many hours you want the program to start, not what time you want it to start.

Example: If the current time is 14.00 and you want the program to start at 19.00 you enter 05.00 (hh.mm) as delayed time



After selecting a program to start, display shows the start delay time

Use ▲ or ▼ keys to program the desired delayed time

After 10 seconds, or immediately if the ►■ key is pressed again, the program will run and the firing indicator lamp will remain lit. The display will show the time remaining until program start

6.10 Indications during firing

When a firing is running:



Main Display will show the current temperature

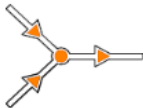
SEGMENT



Segment Display will show the segment number that the program has reached

When heating elements are operating a small dot appears next to current temperature, and the red light in kilns main switch will light ON.

Mimic display:



▼ icon will be ON if the segment is for temperature raise.

▲ icon will be ON if the segment is for temperature decrease.

► icon will be ON during soaking time.

NOTE: During soaking time main display will show current temperature and time remaining to complete soaking time.

NOTE: This indication light (No 8) will light on during firing ONLY when the heating elements are working.

During a firing this light will switch OFF and ON indicating the heating elements operation.

6.10 Functions during firing

Program Review

While a program is running you can check which program you started as well as all of its segments.



When kiln is firing the main display shows the current temperature.

The controller settings can be reviewed by pressing the ► key.



The first push of the ► key flashes the program number display.



The next push of the ► key displays the ramp rate in the range



The next push of the ► key displays the segment final temperature.



The next push of the ► key displays the soak time in hours:minutes



Follow this steps to review all segments until you get to program END
Push the ► key once more and you will return to Current temperature indication.

Altering the program

While a program is running you can change any parameter you want (rate, temperature or soaking time) without stopping the program.

Note: You can not change a segment if it is already started. For example if programming is running on segment 2 you can change segments 3, 4 etc

To change program parameters follow the same procedure as in chapter 9.8.1. When you reach the parameter you need to change use ▲ or ▼ keys to set the desired parameter.

Segment SKIP

While firing press and hold down the ▲ key for 3 seconds to obtain the ►► (advance) function. The ST215 will sound a short beep and the executing program will immediately advance one step as indicated by lamps on the mimic panel.

The effect of this is as follows:

If ramping then the ST215 will switch to soak at the current kiln temperature.

If soaking then the ST215 will advance to the next segment if any, or else it will end the firing.

Changes made to the operation of the ST215 in this way are temporary and are not stored.

Program PAUSE

While firing press and hold down the ▼ key to obtain the ॥ (pause) function.



The ST215 will sound a short beep and the executing program will pause indefinitely at the current kiln temperature.

To release the pause repeat the above action.

While paused, the kiln temperature display will alternate periodically with a scrolling

WARNING - PROGRAM PAUSE

The program pause facility should be used with care. Program execution is suspended and the kiln will be held at its current temperature. If left too long at high temperatures kiln damage could result.

Pause will automatically release after 2 hours

Energy consumption

While a program is running you can check the energy consumed up to this point of firing.

When Main display shows the current temperature push ◀ key once. Main display will show the current set point temperature

Set Point temperature

While a program is running you can check the set point temperature (the temperature which the ST215 is currently trying to achieve).

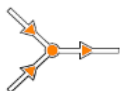
When Main display shows the current temperature push ◀ key twice. Main display will show the current set point temperature

6.11 Program STOP

To stop the firing prematurely at any time press the ▶ ■ key .
The firing indicator lamp will go out.

6.12 Completion of firing

While the kiln temperature is above 40°C the display alternates every 5 seconds between the kiln temperature and Hot.



Upon completion of firing the ST215 lights all lamps on the mimic display and the kiln is allowed to cool naturally.

When the kiln has cooled to less than 40°C the display alternates every 5 seconds between the kiln temperature and End.



To return the ST215 back to idle condition ready for the next firing press the ▶ ■ key (or turn off the power to the instrument).



For your safety do not open the kiln before temperature drops to 50C.

NOTE: Firing is completed when the main display shows "HOT"
You can now switch off the kiln and the mains.

6.13 Useful programming operations

FULL ramp rate

Full ramp rate causes the kiln to heat as fast as possible uncontrollably.

To program full, on segment ramp rate press and keep pressed ▲ key, until display shows "FULL"

Controlled cooling

You can program the kiln to cool down SLOWER than its natural cooling rate.

Cooling segments are programmed in the exact same way as heating segments.

Energy Used

When not firing, and main display shows Current temperature push ◀ key to show the total amount of electrical energy used in KWH during the last firing.

This information is stored while power is off and is only reset to zero when a new firing is started.

Keyboard Lock Facility

The keys can be locked so that pressing them has no effect.



This is an anti-tamper feature used to ensure that the operation of the ST215 or the program data cannot be altered by un-authorized people. The ST215 can be locked when it is idle (not firing) or while it is firing. It cannot be locked while it is being programmed.



Press the ▲ & ▼ keys together & hold down for 5 seconds to lock or to unlock.

Power Failure Recovery

If power fails during firing then the ST215 recovers automatically as follows:

For power failure during start delay the ST215 times off the remaining start delay when power returns.

For power failure during ramping the ST215 continues the ramp it was previously executing.

For power failure during soaking the ST215 ramps back up to soak temperature at the correct ramp rate then applies the remaining soak period.

This recovery scheme can be disabled if required. In this case please contact our technicians

6.14 Error Messages

If the ST215 detects a problem the buzzer will sound and an error message will be displayed. This error message will alternate with a display of kiln temperature.

The segment number display will show where the error occurred.

To obtain more information on the error operate the ◀ key.

The first press will display the maximum temperature reached in the firing.

The second press will display the length of time that the error has been present. The buzzer will mute.

Please keep a note of the above mentioned information as it will be needed in case you contact our technicians.

Error 1 - Heating error. The kiln temperature is not increasing as required. The kiln has been on full power for 15 minutes but the temperature has not increased by at least 2°C.

Possible causes:

kiln door or lid not closed properly or door switch faulty

Heater element open circuit

Elements too old

Electrical power phase failure

Contactor failure

Error 2 - Thermocouple or thermocouple wiring open circuit.

Get thermocouple and wiring checked.

Replace thermocouple if necessary.

Error 3 - Thermocouple reversed (kiln temperature apparently less than -40°C). This is an installation fault. Get wiring checked.

Error 4 - Cooling error. The kiln has been on zero power for 30 minutes but the kiln temperature has not fallen by at least 1°C.

Possible causes:

contactor failure

thermocouple connection intermittent or high resistance.

Error 5 - Kiln temperature overshoot. The kiln temperature exceeds the desired temperature by a preset limit.

Error 6 - Maximum firing time exceeded. The length of the firing has exceeded an installer selectable limit.

Error 7 - Maximum room temperature exceeded. The internal temperature of the ST215 has exceeded an installer selectable limit.

Possible causes: kiln room vent fan failure, kiln room too small, ventilation grills blocked, damper or bung left open, controller mounted too close to kiln.

All these error messages cause the ST215 to terminate the firing and so offer some protection to the kiln.

Firing Program Errors

ErrP - This error message is displayed if a potential error is detected within the firing program when the ►_n key is pressed. The alarm buzzer will sound 3 times and the segment display will show the suspect segment number.

To clear this error press the ► key.

The ST215 will now enter programming mode to allow the suspect program to be viewed and altered if necessary. If a fault is found then correct it. If no fault is found then press the ►_n key again to force the firing program to start. A potential programming error is defined as a very low ramp rate to a very low temperature. Such a programming fault might cause very long firing times with potential kiln damage.



DO NOT ATTEMPT TO FIX ANY PROBLEM BY YOURSELF. PLEASE CONTACT OUR TECHNICIANS, OR A LOCAL CERTIFIED ELECTRICIAN.

BONIS TECHNICAL SUPPORT

TEL 0030 210 6220520, 0030 210 6220521



Email. info@bonis.gr

7. Kiln Drying – First firing

Before using your kiln for firing you ceramics you must complete a first firing, which will allow the kiln insulation material to dry, and will create a thin protecting layer over the heating elements, which will make them last longer.

It is also recommended to place all your kiln shelves in the kiln, in order to dry them out. Please do not stack kiln shelves one on top of the other. Use stilts to support shelves.

Kiln drying is pre installed as program No 20

Segment	Ramp	Temperature	Soak
	C per h	Degrees C	Time hh.mm
	<		
1	150	150	00.00
2	60	250	00.00
3	80	550	00.00
4	110	1050	00.30
5	END		

(Firing duration: approximately 11 hours 30 minutes)

8. Pre installed Programs

No	Type	Rate	T Max	Soak	Duration
PRO 1	BISQUE	SLOW	980	00.10	14.17
PRO 2	BISQUE	SLOW	1000	00.10	14.27
PRO 3	BISQUE	SLOW	1020	00.10	14.37
PRO 4	BISQUE	SLOW	1040	00.10	14.47
PRO 5	BISQUE	SLOW	1200	00.10	16.07
PRO 6	BISQUE	MEDIUM	980	00.10	10.41
PRO 7	BISQUE	MEDIUM	1000	00.10	10.49
PRO 8	BISQUE	MEDIUM	1020	00.10	10.57
PRO 9	BISQUE	MEDIUM	1040	00.10	11.05
PRO 10	BISQUE	MEDIUM	1200	00.10	12.09
PRO 11	GLAZE/BISQUE	FAST	1020	00.20	9.26
PRO 12	GLAZE/BISQUE	FAST	1040	00.20	9.34
PRO 13	GLAZE/BISQUE	FAST	1220	00.20	10.46
PRO 14	GLAZE/BISQUE	FAST	1240	00.20	10.54
PRO 15	GLAZE/BISQUE	FAST	1250	00.20	10.58
PRO 16	MIX	MEDIUM	1020	00.20	11.07
PRO 17	MIX	MEDIUM	1040	00.20	11.15
PRO 18	GLAZE LOWER	FAST	1240	00.20-1220	11.02
PRO 19	DRY	SLOW	120	02.00	11.00

9. My Programs

Program No	Maximum Temperature	Firing type	Heating Rate	Soak			

10. Notes