Jen-Ken Kilns: Pro-Fusion Line

Table Top Versions User Guide

Models:

The Bonnie Glo: 120 volts - 13 amps - max temp 1700ºF
The Bonnie Glo Plus: - 13 amps - max temp 1700ºF
The Tall Bonnie Glo Plus: 120v - 15 amps - max temp 1700ºF
AF3P Pro-Fusion 16: - 13 amps - max temp 1700ºF

We know you will enjoy your new Jen-Ken Kilns Pro-Fusion Table Top kiln!
This manual is designed to familiarize you with the special operating procedures required for your new all-fiber kiln. At Jen-Ken kilns, we've conducted extensive research into developing the highest quality kilns that are able to defy conventional brick kiln firing schedules. This innovation has made our company the market leader in fiber kiln production. In this manual you'll find information about the benefits and potential limitations of this exciting new technology. Please feel free to contact us at 1-863-648-0585 with questions or comments regarding your new kiln.

Overview:

Over the last ten years insulated ceramic fiber technology has surpassed all industry expectations! At Jen-Ken kilns, we've been on the cutting edge of this new technology from the beginning. Through exhaustive research we've discovered that larger pieces of glass can indeed fire faster in a kiln that does not use a ceramic shelf or contain brick. We've perfected the most efficient way to fire glass!

Efficiency Reason #1: TIME! When a ceramic shelf is used, the shelf and the glass both absorb heat. Glass that is fired on a fiber surface can tolerate a faster increase and decrease in heat! Here's why; Ceramic shelves absorb heat. When glass sits on a ceramic shelf and is heated in the kiln, both the ceramic shelf and glass absorb heat. Here's the thing; the heat absorption and rate of cooling is happening at two very different rates. This slows the whole process down. When glass is fired on rigid fiber alone, the glass and fiber absorb heat and cool at the same rate, allowing for a faster, more consistent and more efficient firing!

Efficiency Reason #2: ENERGY USE! Brick kilns absorb a tremendous amount of heat, and then hold that heat, thus slowing the cooling of the kiln. This absorption of heat energy takes time and slows the kilns heating efficiency on the way up to your process temperature and the way down to room temperature. There's nothing wrong with slow, however, using a fiber kiln can help shave hours off a firing and conserve energy. This is helpful if you want to cycle your kiln multiple times a day! A fiber kiln absorbs very little heat, so the glass is able to benefit from the heat generated by the elements. Since a fiber kiln will absorb and hold less heat, it will also radiate less heat, keeping your room cooler. This means your air conditioner doesn't have to work so hard to keep you and your room cool. This gets the job done faster, more efficiently, and costs less money in electricity.

Efficiency Reason #3: WEIGHT! Another great benefit to an all-fiber kiln is that it's extremely lightweight, compared to a brick kiln the same size. For example, The Bonnie Glo model weight 25 pounds. The same size brick kiln with the same firing space weighs 70 pounds. If you want to travel with your kiln, or just want to store it away or under a counter when not in use, this lightweight option is a dream!

Setting up your kiln:

Your new fiber kiln should be placed on a sturdy non-combustible surface or floor. If the surface is all metal, then assemble and place the kiln stand under the kiln. If the table is wood (or steel over wood), then place one or more ceramic floor tiles down first. A piece of concrete backer board also makes a good choice for non-combustible surface. While kilns themselves do not catch fire, it is important to make sure that the area is safe to locate a kiln and that nothing flammable is near. Fiber kilns have much cooler exterior surfaces than brick kilns, so the distance to walls and other items around the kiln can be as little as 12", as long as the walls of the building stay cool to the touch. **Safety Note:** Remember to never place a kiln directly on a table or solid surface. An air space is always required beneath a kiln.

Kiln Wash and Firing on the Kiln Floor

Apply kiln wash to the kiln floor according to the directions included with the kiln wash. Do not force it dry with heat or apply thick coats. Apply it only to the floor, being cautious not to get any on the coils. Let it dry thoroughly. Using shelf paper on top of the kiln washed base gives a smoother surface to your glass and to offers the most protection to the floor of the kiln. The kiln wash that is applied to the floor is a back-up if a piece of glass shifts during firing and moves off the shelf paper. If shelf paper is not to be used, we recommended using fiber paper 1/32" to 1/8", fiberboard, lava cloth or Kaiser Lee board to help protect your kiln's floor. The kiln wash is the back up to the other protective firing surfaces. If a mishap occurs the replacement of the kiln bottom can be expensive. A kiln washed clay shelf and posts with kiln can be ordered and used anytime, but you'll need to use slower, more traditional fusing schedules to accommodate your shelf.

SAFETY FIRST!

Fiber shelf paper is a great product, but used shelf paper can be a nuisance for all of us. Be cautious and follow the manufacturer's directions for cleanup. Powder residue from kiln wash or shelf paper is hazardous to breathe. To minimize dust, lay a damp paper towel over the used shelf paper and then gently and slowly pressing the paper towel down to collect the fibers in the wetness of the towel, trying to make no dust. Make sure the kiln has been switched off before working inside the heating chamber. Vacuum cleaners with HEPA filter can work, but may still release fine dust particles into the air right through the filter. Papyrus brand shelf liner paper holds together better than most and can be reused 2-3 times. Please contact your shelf paper supplier for other safety precautions for their products. You can also add kiln wash between firings by sifting a light coat of the kiln wash powder over the painted coats of kiln wash with a fine mesh strainer. Always wear an approved dust mask for fine powders when working with kiln wash and shelf papers.

Boron Nitride

Boron nitride is another good product that can work well on the floor of a fiber kiln. It is usually applied as an aerosol spray. It only takes 3 thin coats (not thick coats) to give a slippery non-stick surface. A light spray touch-up is required between firings. You can use this over attached kiln wash on the floor or shelf after the loose powders have been clean up with a damp paper towel, but you cannot apply kiln wash over Boron Nitride. While applying BN with a spray can, protect the walls of the kiln and the coils from the spray using paper around the interior. Isopropyl alcohol can be used to remove BN over-spray on some surfaces. A special note to remember is that boron nitride is great for molds, but it tends to stick to glass if taken much over 1425°F-1450°F. So BN is not good for high temperature fusing. We use it as a backup to the shelf paper that is placed on top.

Removing a Finished Project

The floor of your fiber kiln is relatively soft when compared to a clay shelf. Dragging glass across the floor or using your finger nails or a tool to lift the glass off a surface that need to be protected is difficult. Glass should be lifted gently. Many artists use suction cups, purchase from the auto supply store, to remove the glass from the kiln so that they do not disturb the liner paper. Remember to lift slowly as not to make a whirlwind of dust in the kiln. Shelf paper or fiber paper will not protect floor from gauges and scratches from sliding glass, these are only an aid in surface release. Divots, scratches and gauges can be repaired if necessary. Please contact Jen-Ken Kilns for repair instructions.

Controllers and Firing Schedules

The Orton 3 button controller is standard on our Bonnie Glo kilns and the Pro-Fusion 16. The Orton 12-key controller is standard on the Pro-Fusion 26, 36, and 52 models. The Orton 12-key controller is also available as an option for the Pro-Fusion 16. All Jen-Ken Kilns 3-key controllers come with conservative pre-programmed schedules and the added flexibility of adding custom programs, up to 8 segments. You can also edit the pre-programmed schedules to suit your needs.

Firing in the Pro-Fusion Kilns:

In the 1st column of the chart below, is a common firing schedule for a brick kiln, for fusing (2) 3mm pieces of sheet glass. We are going to speed the fusing up to save time and electricity. Try the Fiber Slow Firing schedule with a 6"and 12"-piece. Next time, speed it up and use the schedule in the 3rd column of the chart, Fiber Fast Firing. The smaller the pieces are, the faster you can go.

	Start Here	Then Try This	Pro Fusion 16 Full Fuse
Brick Kiln Fusing	**Fiber Slow Firing Fusing**	**Fiber Fast Firing Fusing**	**Good Pro Fusion 16 Program**
Ra1 300° per hour	Ra1 500° per hour	Ra1 750° per hour	Ra1 500° per hour
°F1 1200° degrees	°F1 1500° F	°F1 1500° F	°F1 1000° F
Hld1 30 minutes	Hld1 10 minutes	Hld1 5 minutes	Hld1 10 minutes
Ra2 500° per hour	Ra2 Full per hour	Ra2 Full per hour	Ra2 Full per hour
°F2 1480° degrees	°F2 950° degrees	°F2 950° degrees	°F2 1500° degrees
Hld 2 20 minutes	Hld 2 30 minutes	Hld 2 30 minutes	Hld 2 10 minutes
Ra3 Full	Ra3 0000	RA3 0000	Ra3 Full
°F3 950° degrees			°F3 950° degrees
Hld3 30 to 1 hour			Hld3 minutes
Ra4 200 per hour			Ra4 0000
°F4 700 degrees		***Full for the Bonnie Glo kiln**	
Hld4 0		**is about 1500°F per hour**	
Ra5 0000			

***Using a rate of FULL in the first 1000 degrees of the firing is appropriate only for pieces less than 3" squared and less than 3 layers thick. Larger pieces can go "FULL" after the first 1000 degrees, or as fast as the piece will tolerate. Taking the time to conduct a few test firings will go a long way in know what your kiln can and cannot do for you.

Annealing

Annealing is an important step of a firing schedule to reduce stress. Follow the glass manufacturer's guidelines for the length of time and appropriate temperature for your glass. On the way down, hold between 900°F-950°F for a length of time relative to the size of the pieces to help reduce internal stress. (Bullseye Glass Company's current recommended anneal temp is 900°F, while Spectrum Glass Company's recommended annealing temperature is 950°F.) In a fiber kiln, jewelry sized pieces generally do not need to anneal. The bigger your pieces are, the longer you'll need to anneal. Your firing results will give you an indication of annealing times that will work for your size work. For larger pieces, start with a 30-45 min annealing time and you can work your way down to shorten your schedules if you like.

Once the kiln shows complete turn the toggle switch to off and let cool. Then later turn the toggle back on and it will show the current temperature to indicate if the kiln is near room temperature and can be opened.

A good home test for stress in the finished glass: Put finished pieces in the freezer. Take them out and run HOT tap water over them. If they don't break, they are stress free!

Fusing Thick Glass and Second Firings and Slumping Glass

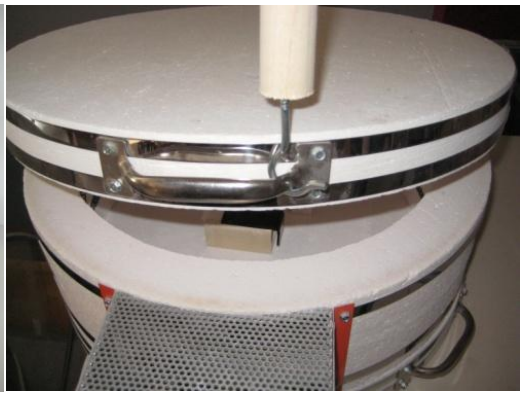
Rippled glass is thick and thin over the entire surface and will need to heat slower than two or three layers of single layer glass to accommodate the glass variances. If fusing clear over ripple, then slow down and add a bubble squeeze in around 1200°F to minimize trapped air. A bubble squeeze is a hold in 1200°F range to allow the top piece to slump slowly into the bottom piece and allow the most air to escape. Glass that is 6mm thick or more will also need to fire a slower (more like 300°F -500°F or less per hour, not FULL (as fast as Possible)) on the way up. Remember, a fully fused piece of glass is now 6mm thick or more and cannot be taken as fast as the thinner assembled pieces from the first firing. You'll need to slow down for a second firing of your fused work or slumping, either into or over a mold. Try using the "Slump Program" that is in the controller under the SP mode, and speed it up from there. Also, slow down firing rates to accommodate your ceramic molds. You may need to ramp as slow as 300°F or less per hour, depending on the mold. Make sure your mold is vented with pin holes in the mold to allow air to escape.

Small Jewelry Sized Pieces (3"x3" or less):

These sized pieces can be fired VERY quickly in the fiber kilns with no adverse effects. Full /to 1500°F/0 hold in the Bonnie Glo and Full/1470°F /5min hold in the Pro-Fusion 16 have been successful firing schedules in our studio.

The Bonnie Glo's

The Bonnie Glo is a top loading kiln that loads from the top. It is 15" x 6" or 9" deep and able to handle a 14" diameter piece or a 10"x 10" square, 2-layer piece of glass to be full fused. If thick work is to be full fused it will spread out to be larger as it seeks a ¼" thickness. It has a lid handle to open and close the lid as well as a lid prop support to vent the kiln as needed. Some use the lid prop on the lowest setting on the way up to vent the kiln paper fumes out of the kiln and then close it at 800°F using a tool (Caution: Hot handles look like cold handles). Use a wooded rod with a hook in the end to open the kiln a little to take a peek or to help close the lid after venting.

The Bonnie Glo Plus is top loading and clam shell opening so that pieces can be assembled on the floor of the kiln. Open the lid of the kiln and use a pencil to mark a circle on the floor of the kiln to indicate the 15" diameter, so that when the kiln is open clam style there is an indication of the area to stay within. Apply kiln wash let dry and then add the shelf paper. There are two other clamps; one holds the top lid closed when the kiln is open in clamshell style, and the second secures the heating section to the floor of the kiln. Use these clamps appropriately so there isn't a mishap while opening the kiln. The Tilt Model has a stand with a clamp attached to it where the kiln connects to the stand to ensure that the kiln does not tip backwards. **Important**: <u>This dual opening kiln MUST be clamped to the stand before use.</u>





Open from bottom | Open from Top | Stand Corner | Tilt Model Stand | Stand Clamped to Kiln

The Tall Bonnie Glo: This kiln is a taller version of the Bonnie Glo. It is 9" deep which is a great width to depth ratio for slumping molds. It draws 15 amps and requires a 20 amp breaker. To receive the most from this kiln and to supply optimum power, position the kiln as close as possible to the breaker box. It still heats quickly on demand and can hold larger, taller molds.

All of the information for firing the Bonnie Glo also applies to the Tall model.

Tall Bonnie Glo with Lid Prop

AF3P Tall Bonnie Glo

15" wide and 9" deep on the inside

Recapping the Set-up for the Bonnie-Glo, Bonnie-Glo Plus and Tall Bonnie Glo:

1) Place the kiln and stand onto a Non-combustible surface.

2) Set the kiln up at least 12 inches away from any walls or material that could catch fire. Ensure that the kiln is centered on the stand. On the Plus or clamshell style model, make sure the kiln is clamped to the stand before opening or using the kiln.

3) Plug the kiln into a plug on a 20a circuit, assure that nothing else is running on that circuit while the kiln is. No Power strips or extension cords allowed. All kilns perform best closer to the breaker box.

4) Kiln wash the floor of the kiln. (Directions are provided on the pack of kiln wash that came with your kiln.)

5) Turn the kiln on with the toggle switch and it should power up and show the mode the kiln is in (ex. "SP" Mode = small piece glass mode) and then current temperature and IDLE.

6) Directions for the controller are included in the 3 key manual and a quick start guide can be found below. There are YouTube videos online and you can always call our offices for help. Jen-Ken Kilns wants you to be successful. If you need us, never hesitate to call.

High Temperature Warnings:

Bonnie Glo models may experience small stress fractures in the body of the kiln around the rim, when taken above 1600°F or for long high-temp holds. When attempting pot melts, raking, casting, or other high-temp work, please consider appropriate firing schedules for your kiln. While these are fast firing kilns, they were not designed to go to high temps and hold for long periods of time. The cause of these stress lines is that the kiln body is shrinking. Each kiln has been put into a kiln and pre-fired to 1800°F. We are improving the temperature ratings of our fiber kilns each year and soon these issues should disappear. Fiber Patch is available to mend cracks and small damaged areas of the fiber kilns as needed. Our square fiber kilns tend to be more tolerant to these high temperature firings.

The Pro-Fusion 16 models have the largest interior available, while assuring the kiln reaches 1600°F on 120 volts and 15 amps. This is well above standard fusing temperature needs. The kiln can make it to 1650°F - 1700°F if the kiln has great voltage supplied to it and is close to the breaker box. Distance and small wire size in the wall are things that can keep the kiln from firing hotter, and slow ramp rates.

Firing it Up!

Directions for the controller are included separately and a quick start guide can be found below.

Quick start guide for your AF3P Controller on the Bonnie Glo's

Your controller contains 4 pre-programmed options, but let's put in your first QUICK-FIRING schedule. This first program is to FULL FUSE for small pieces. Next you will see what is to be entered.

Rate 1 (ra1)	**500°F**	**degrees per hour**
Degrees F 1	**1500°F**	**temperature going to**
Hold 1/	**0 min**	**hold time in hours and minutes**
Rate 2 (ra2)	**FULL**	
Degrees F 2	**950°F**	
Hold 2	**30 min**	
Rate 3 (ra3)	**0**	**to end the program**

A quick guide to entering this example program:

From Idle:

Press PROGRAM START/STOP To show what program the controller is currently in. Press INCREASE OPTION To scroll through programs. The choices are Fuse, Tac, Pol, Pro1, Pro2, Pro3, Pro 4 then repeats the list. Stop on Pr01 (for Program 1) , then press…. PROGRAM START/STOP

Now enter the numbers for this program for ra1 enter 500 using the INCREASE OPTION then press PROGRAM START/STOP

Now enter the first temperature °F1 of 1500F using the DECREASE REVIEW button and press PROGRAM START/STOP

Now enter the first hold, Hld1 of 10 Minutes using the INCREASE OPTION button to enter 00.10 then press PROGRAM START/STOP

Now enter FULL for ra2. To enter FULL, press the DECREASE REVIEW button when you are at 0, then press PROGRAM START/STOP

Now enter the 2nd temperature °F2 of 900°F - 950°F using DECREASE REVIEW INCREASE OPTION key and press PROGRAM START/STOP

Now enter the 2nd hold Hld2 of 30 Minutes using the 

or 

keys to enter 00.30 then press 

Now for ra3 use the 

or 

to enter a 0 and press 

The display should show **Strt.** Now press 

to start the kiln. The controller will start to cycle on and off.

Note: It is a good idea to review a program while it is running.

While the kiln is heating a press of the 

button once will do a program review. This makes the controller cycle through the program just entered so that a review of the numbers can be done.

To Stop the firing, press the 

once to stop and again to go back to idle.

Faster Firing Example:

For the next, faster fusing program try 750°F per hour to 1500°F and hold 5 minutes, then as fast as possible to anneal the glass at 900°F - 950°F for 30 minutes and then off. Below are the steps to enter this program.

From Idle

Press 

To show what program the controller is currently in. Press 

To scroll through programs the choices are Fuse, Tac, SLP, Pol, Pro1, Pro2, Pro3, Pro4 then repeats the list as the up button on pressed Stop on Pr01 (for Program 1) , then press… 

Now enter for ra1 enter 750 using the 

or 

then press 

Now enter the first temperature °F1 of 1500°F using 

or 

and press 

Now enter the first hold Hld1 of 5 Minutes using the 

or 

to enter 0 then press 

Now enter FULL for ra2. To enter FULL, press the 

button when you are at 0 then press it once more then press 

Now enter the 2nd temperature °F2 of 900°F - 950°F us

Now enter the 2nd hold Hld2 of 30 Minutes using 

or 

to enter 00.30 then press 

Now for ra3 use INCREASE OPTION or DECREASE REVIEW to enter a 0 and press PROGRAM START/STOP

The display should say **Strt.** Now press PROGRAM START/STOP to start the kiln. The controller will start to cycle on and off.

Note:

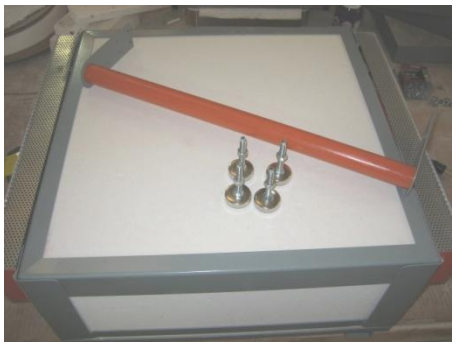
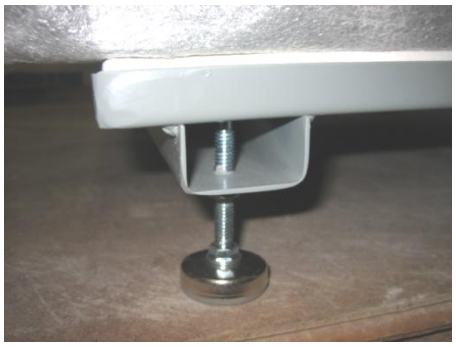
While the kiln is heating a press of the DECREASE REVIEW button once will do a program review. This makes the controller cycle

Through the program just entered so that a review of the numbers can be done.

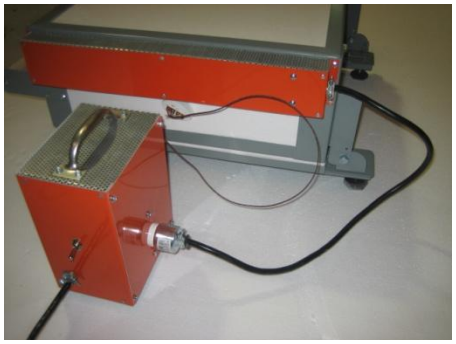
To Stop the firing press the PROGRAM START/STOP once to stop and again to go back to idle.

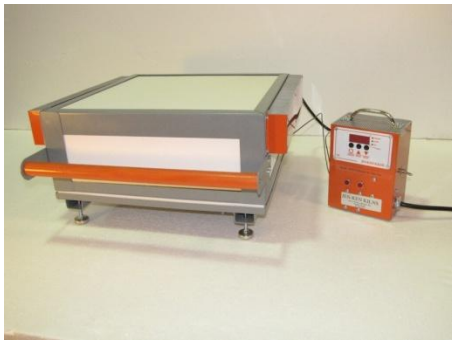
Set-up for the AF3P Pro-Fusion 16 Square.

When the kiln arrives, the handle and leveling feet will need to be attached. With the kiln sitting flat on a table, lift from underneath the kiln base and raise the kiln enough to attach the front feet. Then lift the rear to attach the back feet.

Simply screw the threaded foot into the hole on the base until it touches the bed of the kiln and stop. The handle has been removed for shipping, re-attached it to the front with the screws provided.





To get started after attaching handle and leveling feet:

1) Place the kiln onto a non-combustible surface at least 12” away from any flammable materials.
2) Plug the kiln into the controller.
3) Plug the controller into the wall. The kiln should be the only thing running on your circuit. Note: All kilns perform best closer to the breaker box.

4) Slide the thermocouple into the hole in the middle of the right side of the kiln. It needs to protrude at least an inch into the kiln to read properly. As shown in the picture, the brown thermocouple wire should be bent in a loop away from the kiln and controller to ensure the kiln can open and close without touching the thermocouple wire. (Ensure that the thermocouple wire is not touching any metal surface.)

5) There are TWO toggle switches to power on your kiln. The first one is ON THE KILN itself above where the power cord comes to the kiln. The other is on the controller. Switch them BOTH up to the "on" position. When you turn the controller on, it will boot up while displaying whatever "MODE" you are in, "SP" for Small Piece mode as an example. Then it will display IDLE and the temperature, alternately.

6) Kiln-wash the raised area of the floor (directions are provided on the pack of kiln wash that came with your kiln.)

7) Fire it up! Directions for the controller are included separately. A quick start guide can be found below.

Quick start guide for your AF3P Controller on the Pro-Fusion 16

Here's the program we use for a full fuse in the Pro-Fusion 16

Your controller contains 4 pre-programmed options, but let's put in your first QUICK-FIRING schedule. This first program is to FULL FUSE for small pieces. Next you will see what is to be entered.

For the next, faster fusing program try 500°F per hour to 1000°F and hold 0 minutes, then as fast as possible to 1500°F and hold 10 minutes, then as fast as possible to anneal the glass at 900°F - 950°F for 30 minutes and then off. Below are the steps to enter this program.

Rate 1 (ra1)	**500**	**degrees per hour**
Degrees F 1	**1000°F**	**temperature going to**
Hold 1/	**0 min**	**hold time in hours and minutes**
Rate 2 (ra2)	**FULL**	
Degrees F 2	**1500°F**	
Hold 2	**30 min**	
Rate 3 (ra3)	**FULL**	
Degrees F 3	**1500°F**	
Hold 3	**30 min**	
Rate 4 (ra4)	**0**	**to end the program**

A quick guide to entering this example program:

From Idle:

Press PROGRAM START/STOP To show what program the controller is currently in. Press INCREASE OPTION To scroll through programs. The choices are Fuse, Tac, Pol, Pro1, Pro2, Pro3, Pro 4 then repeats the list. Stop on Pr01 (for Program 1) , then press… PROGRAM START/STOP

Now enter the numbers for this program, for ra1 enter 500 using the 

then press 

Now enter the first temperature ^{o}F1 of 1000^{o}F using the 

button and press 

Now enter the first hold, Hld1 of 0 Minutes using the 

button to enter 00.00 then press 

Now enter FULL for ra2. To enter FULL, press the 

button when you are at 0, press once more, then 

Now enter the 2nd temperature ^{o}F2 of 1500^{o}F using the 

or 

key and pre 

Now enter the 2nd hold Hld2 of 10 Minutes using the 

or 

keys to enter 00.10 then press 

Now enter FULL for ra3. To enter FULL, press the 

button when you are at 0, press once more, then 

Now enter the 3rd temperature ^{o}F3 of 950^{o}F using the 

or 

key and press 

Now enter the 3nd hold Hld3 of 30 Minutes using the 

or 

keys to enter 00.30 then press 

Now for ra4 use the 

or 

to enter a 0 and press 

The display should show **Strt.** Now press 

to start the kiln.

The controller will start to cycle on and off.

Note:

While the kiln is heating a press of the 

button once will do a program review. This makes the controller cycle through the program just entered so that a review of the numbers can be done.

To Stop the firing, press the 

once to stop and again to go back to idle.

Never Leave a Firing Kiln Unattended!

Call if you need help, and thank you for using one of our kilns. Go and make great things.

Jen-Ken Kilns

863-648-0585 M-F 8-4 Eastern