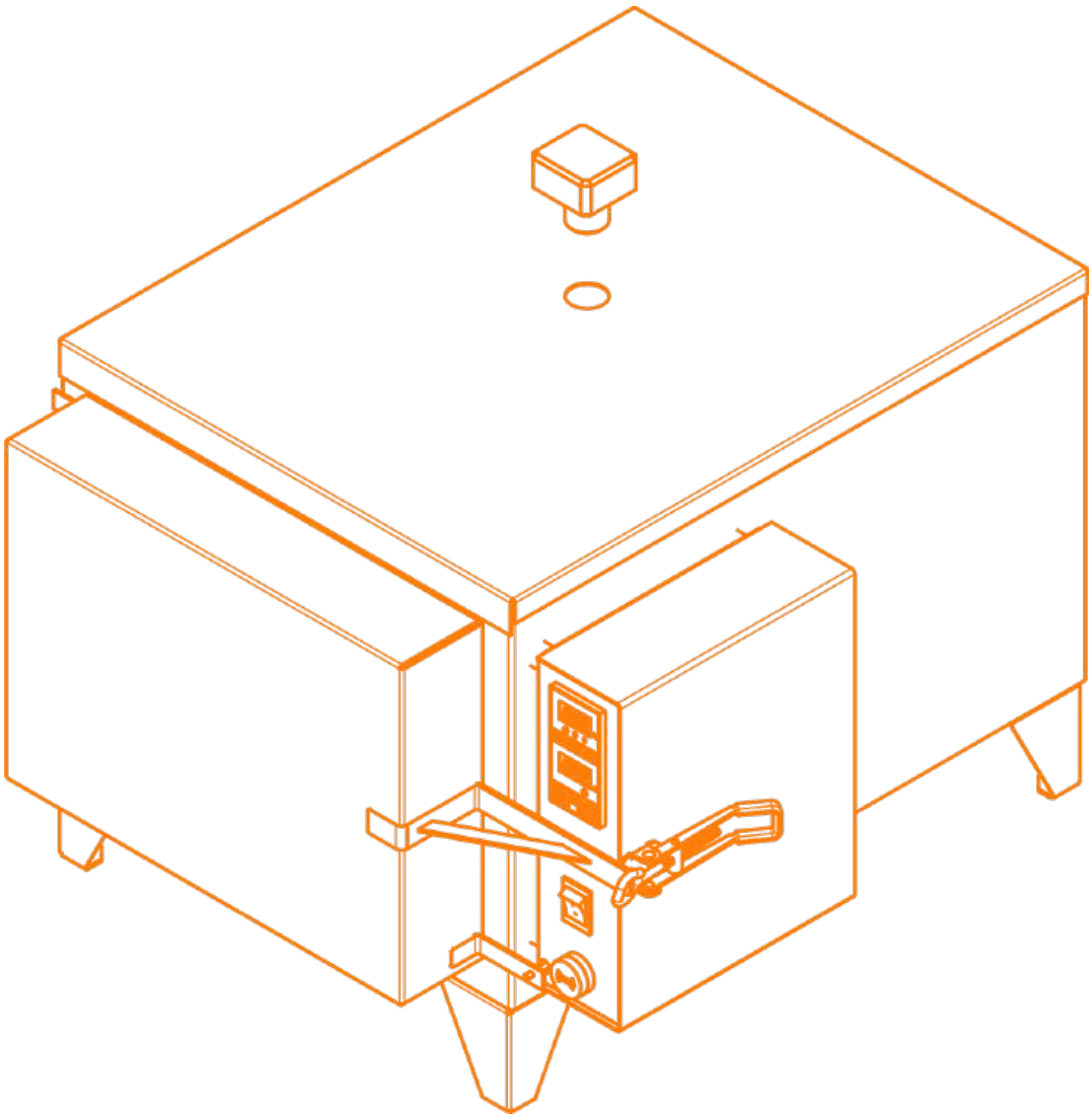
EASY KILNS

Owner's manual 1st edition



Warning!

1. **This kiln should not be used by persons (including children) with reduced physical, sensory or mental capabilities or lack of experience and knowledge unless they have been given supervision or instruction.**

2. **Children should be supervised so that they do not play with the kiln.**

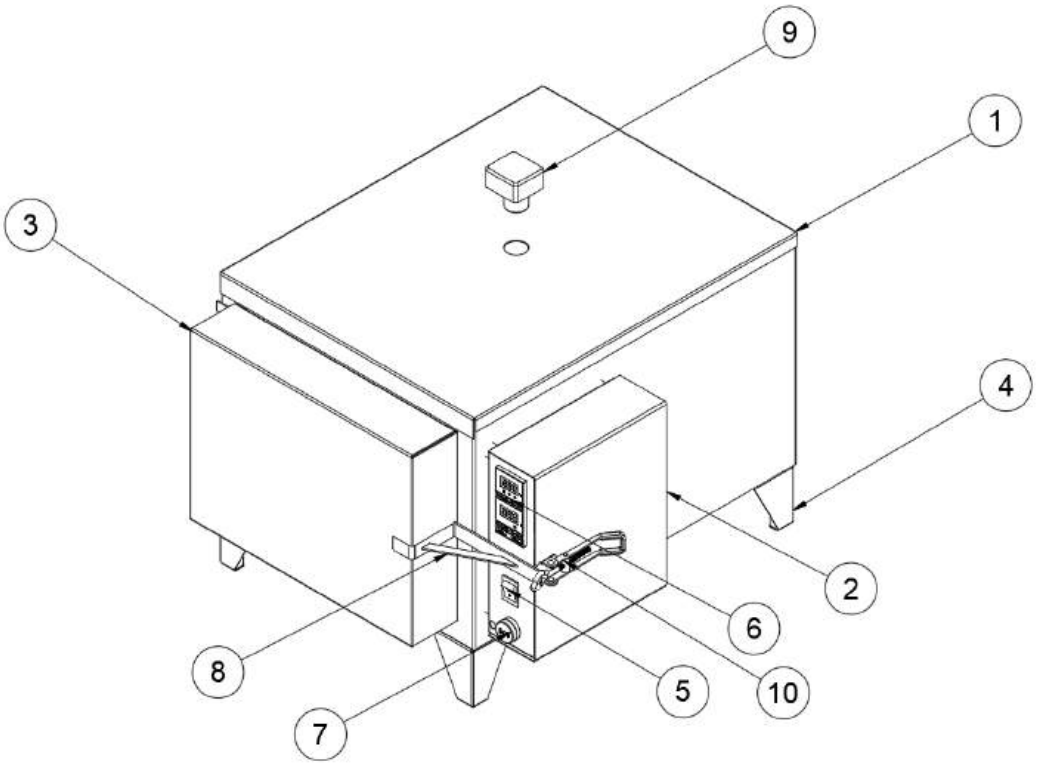
3. **If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.**

4. **Please read the instruction manual carefully before operating the kiln.**

Thank you for purchasing an EASY KILN!

We're excited to be a part of your creative journey and are committed to providing you with the highest quality experience. Please note that the warranty on your kiln does not cover damage caused by overfiring, regardless of the circumstances. It is the operator's responsibility to ensure the kiln turns off when the firing is completed. To prevent issues, never leave your kiln unattended near the end of the firing process. Fibreboard expands and contracts with each firing, resulting in hairline cracks while the kiln is cold—even in a new kiln. These cracks are normal and serve as expansion joints. They close tightly when the board heats up and will not affect the kiln's performance or firing results. A small amount of light may be visible around the edge of the door. As long as the door is closed completely, this is normal and results in minimal heat loss.We're here to support you every step of the way. If you have any concerns or questions, please don't hesitate to reach out!

PARTS



1. **Kiln heating body:** Contains insulation, elements, casing gets very hot during use.
2. **Control box:** Actively cooled control box containing sensitive electronics.
3. **Kiln door:** Contains insulation and seals heat into the kiln chamber.
4. **Stainless steel kiln legs:** Keep kiln raised off the benchtop surface and help prevent heat from reaching the feet pads.
5. **2 pole rocker switch:** Isolates the entire circuit of the kiln for safe loading/unloading.
6. **Ramp soak programmable controller:** Measures temperature, powers element to achieve desired temperature schedule.
7. **Electronic buzzer:** Settable alarm if you want the kiln to alert you once a schedule is complete or once it reaches a certain temperature. Disabled by default.
8. **Door latch extension:** Holds the door closed
9. **Kiln vent plug:** Holds temperature, once removed gases can escape when firing bisquare, burnout etc.
10. **Latch:** Holds door shut, lockable.
11. **Safety Pin**: Activates the element circuit switch when closed, disables the element when open to allow safe loading/unloading.

SAFETY

- There is minimal risk of serious burns from accidental contact with the kiln, provided you exercise the same level of caution as you would with an electric iron.
- Do not install closer than 200mm from any wall or combustible surface.
- Always fire your kiln in a well-ventilated, covered, and protected area to ensure safety and optimal performance.
- Do not open the lid until the kiln has fully cooled to room temperature and the switch has been turned off.
- Never touch the heating elements with anything to avoid risking electrocution.
- Disconnect kiln before servicing
- Never leave the kiln unattended while firing. Do not leave the kiln turned on in your studio if you are away or sleeping.
- Always wear firing safety glasses when looking into a hot kiln to protect your eyes from heat and glare.
- Keep the kiln door closed when it is not in use. This helps prevent dust from entering the kiln and, in the unlikely event that someone turns on the kiln while you are away, ensures that the heat remains safely contained within the firing chamber.
- Remove all tripping hazards from the area surrounding the kiln. Ensure the kiln's supply cord is kept out of high traffic areas to prevent accidents.
- Do not allow the cord to touch the side of the kiln, as the heat may damage the cord.
- Avoid extension cords as they will reduce the firing temperature of the kiln and may pose a fire hazard.
- When loading or unloading your kiln, always wear gloves. Choose gloves that are thick and durable to shield your hands from hazards such as glaze shards, fragments of pyrometric cones stuck to shelves, sharp edges of broken ceramics, and stilt marks on the bottoms of glazed pieces.
- Do not remove items from the kiln until it has cooled to below 80°C. Removing ceramics while they are still hot can cause thermal shock, potentially breaking the pieces. Broken ceramic edges can be extremely sharp and pose a risk of injury.

- After firing glazed ware, inspect the kiln shelves for any glaze particles. Sharp glaze slivers stuck to the shelves can cause cuts. Always ensure the shelf is clear of glaze shards before running your hand over its surface.
- Only fire materials specifically approved for kiln use and purchased from a knowledgeable supplier. Avoid firing items such as marbles, concrete, rocks, or other unapproved objects, as rapid heating to high temperatures can cause dangerous reactions or explosions.
- Do not fire toxic materials, such as mothballs, in your kiln. When burned, mothballs release harmful fumes and can even explode, posing serious health and safety risks.
- Greenware, or unfired clay, must be completely bone dry before firing. Moist greenware can explode in the kiln, causing damage to both the pieces and the kiln itself. To check if the greenware is dry, touch it to the inside of your wrist; if it feels cool, it is still too wet to fire.
- Do not fire cracked shelves, as they can break during firing and potentially damage the items in the kiln.
- As the kiln fires, make it a habit to periodically touch the power cord to check its temperature. A slightly warm cord is normal, but it should never feel hot. Also, ensure the plug is securely inserted into the receptacle to prevent overheating or electrical issues.
- Never add extra insulation around the kiln to try to conserve energy. Doing so can cause the wiring and aluminum case to overheat, creating a serious fire risk.
- Fire kiln on non-combustible surfaces only.
- Keep unsupervised children away from the kiln and the work area.
- Unplug the kiln or turn off the electrical shut-off box or circuit breaker when the kiln is not in use, especially if you're concerned that someone might accidentally turn it on while you're away.
- Always wear a P1 (N95) or higher breathing mask when working with the kiln. Fiberboard and ceramic dust can pose a health risk if inhaled.
- Supervision and Access Control: Restrict access to the kiln during firing. The exterior can exceed 120°C, and unauthorized handling can lead to injury. Secure the kiln door with a padlock to prevent tampering, especially by children.

- Automatic Safety Features: The kiln is equipped with a dual-pole automatic safety switch to cut power when the door is opened. Never bypass this switch. Always switch off and unplug the kiln before performing maintenance.
- Maximum Temperature: Do not exceed 1280°C, as this may void the warranty and severely damage the kiln. For longevity, limit firings to 1260°C or below. Just by operating 100 degrees less (from 1280 to 1180c) you can increase element lifespan 5x
- Thermocouple Safety: Avoid contact between the thermocouple and kiln ware to prevent overfiring and ensure accurate temperature readings.

WHERE TO LOCATE YOUR KILN

Ventilation: Position the kiln in a space with natural ventilation to the outside. Consider forced ventilation if natural airflow is insufficient, as kiln fumes can damage metal fittings and pose health risks. Never expose the kiln to outdoor weather; it lacks an IP rating.

Clearance: Keep 200mm (8 inches) of space around the kiln from walls or other structures. Maintain at least 600mm (24 inches) of clearance above the kiln.

Combustibles: Remove all combustible materials (e.g., canvas, wood, paper, chemicals, plastics) from under, around, or behind the kiln. Never store items on top of the kiln. Position the kiln on a level surface that can withstand heat without being damaged. A cement surface is ideal, but if necessary, you can use a sheet of protective material under the kiln. Consult your hardware or building supply store for appropriate recommendations. Avoid placing the kiln stand on rubber tiles, linoleum, or any surface that could be damaged or discolored by heat. Do not allow the kiln's power supply cord to come into contact with the side of the kiln, as this could cause the cord to burn.

SEATING THE ELEMENTS

Shipping may dislodge the elements of your kiln, so it's important to perform the **Kitchen Knife Test** to ensure the elements are properly seated in their grooves.

Kitchen Knife Test
Important: Always unplug the kiln before touching the elements with anything. Only touch cold elements—never hot ones—with a plastic object like a comb, as plastic can melt and damage the element.

To check the elements:

1. Use a blunt kitchen knife, plastic comb, or similar blunt object to press the elements into their grooves.
2. If the element doesn’t fit easily into the groove corners, you can use automotive snap-ring pliers to gently stretch the space between the coils where the element fits into the wall brick corners.
3. The element should then easily seat into the corners.
4. If the element doesn't lie flat at the bottom of its groove, there's no need for concern as long as it fits all the way back into each corner without bulging out. Keep in mind that elements may not lie flat at the terminal bricks (right behind the switch box).

CLEANING THE KILN

Clean your kiln before firing to ensure optimal performance. Use a soft brush nozzle on a vacuum cleaner to remove brick dust from inside the kiln, particularly from the grooves. You can also use a damp cloth or sponge to gently wipe dust from the sidewalls and brick bottom. Repeat the cleaning whenever you notice dust inside.

Note: Always vacuum the kiln with a HEPA-filtered vacuum cleaner or a central vacuum system that directs the dust outside to prevent dust buildup.

FIRING ACCESSORIES

Shelves: Kiln shelves are flat slabs made of cordierite, fired to a temperature higher than what your kiln will reach. Using multiple shelves allows you to stack more ware, maximizing space and efficiency in your kiln.

Posts: Kiln posts are made from the same material as shelves and are used to support and separate layers of shelves inside the kiln. Shorter posts provide greater stability, but posts can be stacked for additional height. However, a single post is generally more stable than multiple stacked ones.

All-Purpose, High-Fire Kiln Wash: High-fire kiln wash is a mixture of finely ground minerals that do not fuse at porcelain or stoneware temperatures. It acts as a protective barrier between the shelf and any glaze drippings. Kiln wash must be applied to the top of kiln shelves and the kiln bottom to prevent ceramic glaze and glass from permanently sticking to these surfaces. Without this barrier, glaze would bond permanently to the shelf.

Note: Do not apply kiln wash to the kiln walls or lid, as contact will damage the heating elements. Kiln wash, in its powdered form, has an unlimited shelf life.

PREPARING TO FIRE THE KILN

Loading a kiln requires careful attention, as even a small mistake can cause your pottery to melt, crack, under-fire, or misfire. However, when loaded correctly, the kiln can produce stunning ceramic or glass pieces. If you're experiencing issues with not reaching the desired temperature, check that the kiln is packed according to the recommended guidelines before assuming there's a problem with the kiln. Most under-firings result from improper spacing around the thermocouple, the pieces themselves, or uneven loading.

Wear appropriate protective gear: Mask: Class P1 minimum for dust protection. Gloves: Leather mittens or quality gardening gloves. Clothing: Long-sleeved, loose-fitting, non-combustible materials (e.g., leather or wool).

Cleanliness: Remove debris and dust from the kiln and shelves after each firing. Vacuum regularly. **Protect the Kiln Floor:** Always use a shelf as a base layer; never place props or items directly on the kiln floor. **Inspect Pieces**: Ensure all items are dry and free from cracks to avoid damaging the entire load.

How to Use Kiln Wash

1. **Prepare the Mixture**:
   Pour a small amount of water into a disposable container and gradually add powdered kiln wash until the mixture reaches the consistency of coffee cream. Stir thoroughly to dissolve any lumps.
2. **Apply the Kiln Wash**:
   Use a soft paintbrush to apply the kiln wash to the shelf. Each time you dip the brush into the mixture, swirl it around the bottom of the container to ensure the kiln wash is evenly distributed (as it settles quickly). Start brushing near the center of the shelf and work toward the edges to prevent a buildup at the edges.
3. **Apply Multiple Thin Coats**:
   Apply two or three thin coats, allowing each coat to dry for a few minutes between applications. Change the direction of your brush strokes by 90° with each coat to ensure even coverage. Avoid applying thick coats, as they can flake off.
4. **Remove Excess**:
   If there is any kiln wash buildup on the edges of the shelf, remove it by tracing around the edge with your finger. Excess kiln wash can break off and fall onto the ware below.
5. **Dry the Shelves**:
   Let the kiln-washed shelves dry for a few minutes before firing. Allow them to dry completely before placing them in the kiln. You can speed up the drying process by

placing the shelves in the kiln and heating them to around 200°F (93°C) for an hour. However, they are still wet if they feel cool to the touch.

6. **Protect the Kiln Walls and Elements**:
   Use a piece of cardboard to protect the kiln walls and elements from kiln wash during application. Never apply kiln wash to the kiln walls or the underside of shelves.
7. **Final Drying**:
   Let the kiln wash dry overnight before firing the kiln to ensure the wash is fully set.

Loading the Kiln

Balance and Symmetry: Distribute the weight evenly in all directions (left-right, front-back). Use shelves and props to create levels, grouping items by height for efficient use of space.

Thermocouple Placement: Maintain a 2-3 cm clearance around the thermocouple to avoid inaccurate temperature readings.

Glazed Pieces: Use ceramic stilts to prevent glaze from fusing pieces to the shelves. Apply kiln wash to shelves as a secondary measure for glaze drips.

FIRING THE KILN

Please refer to the Maxwell controller manual attached below on programming and beginning the firing of the kiln.

Using Bungs (Door and Roof Plugs)

Bisque Firing: Initial Stage: Keep bungs out until the kiln reaches 600°C or until an orange glow is visible. Moisture Management: If ware is slightly damp, fire with bungs in from the start but ensure pieces are extra dry. Cooling: Optionally remove bungs after reaching maximum temperature to speed up cooling.

Glaze Firing: Bungs can remain in place throughout the firing unless there are burn-out materials (e.g., oils in gold lustres) that require venting. Safety: Remove bungs slowly and always wear protective gear, including shade level 5 welding glasses, to shield eyes and skin from the intense glow.

KILN MAINTENANCE

This section outlines best practices for managing moisture, avoiding foreign materials, and properly using kiln bungs during firings.

Shelf Care and Maintenance

Prevent Warping: Rotate and Flip Regularly: Change the orientation of the shelves between firings to balance stress and prevent excessive bending. Avoid Prolonged High Temperatures: Limit time at maximum temperature to reduce thermal stress on the shelves.

Inspect for Cracking: Early Detection: Replace cracked shelves immediately, as cracks indicate the shelf has reached the end of its useful life.

Common Causes of Shelf Cracking and Prevention

Thermal Shock: Ramp Rate: For thinner shelves, keep the heating or cooling rate within 300°C/hour, especially between 20°C and 250°C. Avoid Moisture: Ensure shelves are completely dry before firing, as moisture can escape violently and cause cracks.

Uneven Heating or Cooling: Proper Circulation: Ensure good airflow around shelves and pieces by maintaining even spacing in the kiln. Balanced Loading: Distribute weight evenly to minimize localized stress.

Improper Propping: Use Three Props: For optimal stability, use three evenly spaced props under each shelf. Alignment: Ensure props are vertically aligned and touch both the ground and the shelf securely.

Moisture Management

Dry Pieces Thoroughly: Ensure pieces are completely dry and not cool to the touch before firing. Firing damp pieces can damage the kiln's refractories and elements and increase the risk of explosions.

Firing Speed: Fire slowly when moisture might be present to reduce stress on the kiln and the ware.

Avoiding Foreign Materials

No Reduction Firing: These kilns are not designed for reduction firings, as the reducing atmosphere can degrade the protective oxide layer on the elements.

Prohibited Materials: Avoid burning out paper, cloth, or other temporary supports in the kiln to prevent damage. Ensure metallic objects, such as burn-out flasks, do not contact the elements to avoid safety hazards.

Cleaning: Brush or vacuum the kiln every few firings to remove dust. Wear a P1 safety mask to prevent inhaling harmful particles.

Element Grooves: Inspect grooves regularly for damage; broken grooves leave elements unsupported. Repair broken sections promptly to prevent element sagging and potential replacement.

Kiln Elements

Inspection: Check that coils are evenly stretched and not bunched or leaning on one another. Worn or sagging elements slow firing times and create uneven heat distribution.

Reseating a Bulging Element

Once an element has been fired, it becomes brittle and will break if bent while cold. To safely re-seat a bulging element, follow these steps:

1. **Unplug the Kiln:** Always disconnect the power before working on the element.
2. **Use a Propane Torch:**
    - Heat the element with the propane torch until it becomes red-hot. Press the igniter to light the flame and hold it near the bulging element until it turns red, then release the igniter.
3. **Reseat the Bulging Element:**
    - With a pair of long-nosed pliers, gently press the individual coils together to shrink the bulging part of the element. Take care not to press two turns tightly enough to touch.
    - As the element shrinks, work it back toward the groove and into place. Work quickly, and stop as soon as you feel stiffness in the coils. Reheat the element if necessary.
4. **Lengthening the Element (if needed):**
    - If you need to lengthen the element to fit it into the corners, use snap-ring pliers (available from automotive parts stores) to expand the space between the coils.
    - **Caution:** Be mindful that the kiln's warranty covers elements only if they fail during normal use, not if damaged from being bent while cold.
5. **Reseat the Element:**
    - Once the element is positioned properly above the dropped recess in the grooves, reheat the element section and use a blunt kitchen knife to press the element into the grooves.

    - **Note:** Never use plastic objects like combs to press hot elements, as melted plastic can ruin the elements.
6. **Final Firing:**
    - Fire the kiln to cone 4 or 5 to fully soften the elements, ensuring they are properly seated and functional.

Replacement Elements: Replace elements if firing times lengthen significantly or heat distribution becomes uneven.

Electrical Safety: Always unplug the kiln before maintenance. Inspect the plug and lead regularly for wear or damage.

Thermocouples

Inspection: Check the metallic end inside the kiln; wear shows as shrinkage, flaking, or breakage.

Failure: A failed thermocouple will trigger a controller fault, halting firing.

Replacement Procedure:

1. **Preparation:** Disconnect the kiln from power.
2. **Removal:** Unscrew the control box cover, locate the **K-type thermocouple terminal**, and remove its mounting screws and electrical connectors.
3. **Installation:** Mount the replacement thermocouple, ensuring correct polarity:
    - Brown wire to **+ terminal**
    - Blue wire to **- terminal**
    - Incorrect polarity will cause the controller to fault.

Safety Door Switch

Function: Prevents power to elements when the door is open, ensuring safety.

Troubleshooting Misalignment: Realign the probe if bumped out of position. Ensure the probe clicks into place when aligned with the control box hole, signaling proper engagement.

Failure Indicators: If the kiln does not heat at all, check this switch first.

EASY KILNS

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Maxwell controller

This is a simplified guide for the Maxwell PU90 controller that is included with your kiln.

1. **THE MAXWELL CONTROLLER** An explanation on the basic operation of the controller.
2. **PROGRAMMING AND USAGE** Next, we will demonstrate how to enter programs into the controller and provide general instructions on using it effectively.
3. **PROGRAM DESIGN**: List of preloaded programs, suggestions on modifications and programming approach
4. **STORING PROGRAMS**: Here we will explain how to access, modify and run multiple programs.
5. **ALARM PROGRAMMING** Finally the alarm, hold and jump functions are demonstrated.

If this is your first time using a digital kiln controller, do not worry! While it may seem a little daunting at first I promise it is quite a simple device and you'll be amazed at how quickly you come to appreciate itt! If you require more technical info on this controller please checkout your included *Maxwell technical documen*t included with your kiln and available online at easykilns.com.au.

THE MAXWELL CONTROLLER

PV - Current temperature
Displays current measured temperature value from thermocouple

SV - Set temperature
Target temperature - 'SET VALYE" or state such as 'run', 'hold', 'stop' or error'

AL1 - Alarm 1
Indicates if the alarm is activated

LED bar
Shows power to element in % of total available power, how hard the kiln is working.

OP1 - Output (element)
Shows the element is energised

A/M button
Press to edit program
Hold to

Set button
Press for choosing starting point, hold 2 seconds for editing alarm condition

Up button
Hold 2 seconds to stop program
Tap to increase value while programming

Run button
Hold 2 seconds to run program
Hold 2 seconds to 'Hold'
Tap to decrease value while programming

The Maxwell controller has 30 available stage memory slots each consisting of a temperature and time value. Once you have entered your desired values for these the controller will remember them until changed so you can keep coming back and just press play to start your firing.

So each of these 30 available *STAGES* has 2 separate *STEPS* you will need to enter.

The *STEPS* are:

1. SP (Set Point) in Degrees C: What temperature you want to go to
2. T (Time) in Minutes: How much time do you want between temperatures?

To program the controller you will give it all the points along the temperature curve you would like, say you want the kiln to go from room temperature to 400c in 2 hours and then STOP.

You would program in SP1: 25c (room temp approximation), T1: 120 (2 hours), SP2: 400 (400c), T2: -120.0 (Stop and return to SP1).

Alternatively if you wanted the kiln to hold indefinitely at its final temperature you would replace -120.0 with -0.1 so T2: -0.1.

Now let's say you want the kiln to hold at a certain temperature for a period of time say 15 minutes and then STOP. You would program that you want it to start this hold at 400c, maintain this temperature for 15 minutes and then stop the hold at 400c.

You would program the controller as follows:

SP1: 25c, T1: 120, SP2: 400, T2:15, SP3:400, T3:-121.0

It is the same when you want the kiln to drop back to temperature over a certain time.
All you need to do is program in the time you want it to drop over, say 10 hours (600 minutes) and the final temperature to stop at, say room temp of 25c. The program would now look like:

SP1: 25c, T1: 120, SP2: 400, T2:15, SP3:400, T3: 600, SP25, T4:-121.0

In the next chapter we will guide you through how to enter these values into the controller, as well as optional enabling of the built in alarm to alert you to certain points in the program, how to translate different program formats online and provide some sample programs.

PROGRAMMING AND USAGE

When you turn your kiln on there will be a beep and the controller will turn on displaying values on its two screens shown below. The top value will be the measured temperature inside the kiln. In this case the temperature is 584.6 degrees and falling as the kiln recently completed a firing. The lower orange values will show the first set point or starting temperature of the current selected profile, followed by the Stop message which means the kiln is currently idling or ‘stopped’.

Current measured temp

Starting temp and running condition either ‘stop or ‘run’.

To start entering in or modifying an existing program press the < button.

This will show SP1 above and the starting temperature of the program at the bottom which in this case is 20.0 degrees celsius. This is usually a good starting temperature. In order to change this value you need to use the 3 arrow keys. The down (run) key will decrease the selected digit, the up (stop) key will increase the selected digits.

To give you an example. In the below left image if I pressed the down arrow the number would become 19.9 because I have reduced it by 0.1. If I wanted to increase it to 30.0 I would press the < key twice to move onto the 2 digit and press the up arrow to increase this to 3 leaving me with 30.0.

Now if for some reason I wanted the value to be 1230c (the kiln will rise to 1230c as fast as possible) I would press the < key one more time to fill the leftmost empty cell. then I would press the up arrow 12 times which would move the decimal point right. This may seem confusing but it would look like:

30 - (up arrow) - 130 - (up arrow) - 230 - (up arrow) - 330 - (up arrow) - 430 - (up arrow) - 530 - (up arrow) - 630 - (up arrow) - 730 - (up arrow) - 830 - (up arrow) - 930 - (up arrow) - 1030 - (up arrow) - 1130 - (up arrow) - 1230

Once you are happy with the value of SP 1 you can press the **SET** button to move onto the first time value.

For the time value it is the same process of using the up down arrows to change each value and the **<** to move across values. In this case **180 minutes** is selected which will correspond with 180 minutes to rise to the SP2 value.

Now press **SET** to go to the next temperature value.

Above second set point (sp2 has been set to 580 degrees celsius.

T - 2 has been set as 60 minutes so the kiln will spend 60 minutes getting to 1000c

SP 3 has been as as 100-c

t - 3 has been set as 180 minutes so the kiln will take 180 minutes to get from 1000c 1180c

SP 4 is set as 1180c

t - 4 is set as 30 minutes.

SP 5 is set as 1240c

In order to hold 1240c for 20 minutes we set t -5 as 20

no we set SP 6 as 1240c as well.

Finally we want the kiln to ‘STOP’
So for t-6 we enter **-121.0** which
Is the stop instruction for the kiln.

Now that you have entered your program, you will need to wait 10 seconds for the controller to time out and go back to the idle home screen. Once it is idling hold the down arrow (**RUN**) to tell the kiln to start the program. You may hear a hum initially as the elements energise which is normal.

The kiln will display the initial target temperature which in this case would be 20c (the image above is from a different program) which will flash between **run** to indicate the kiln is heating. Two other lights will be visible, the led bar in the left image will display how much power the kiln is using of its total available 2400w, on the left it is using 100% on the right it is using 0%. The kiln will also display the small **OP1** red light which is visible under the second orange value display, above the led power bar.

***NOTE:** You can program a **HOLD** or **JUMP** (jump from one step to another) using the following commands: for a **HOLD** simply program in 0.0 for the t value, for a **JUMP** simply input the desired location you want the jump to for the t value. If for instance you wanted the program to jump from step eight to step 2 you would input -2.0 for the t-8 value so **t-8: -2.0**.

STORED PROGRAMS

The Maxwell controller can store 30 steps and comes equipped with pre-programmed generic profiles for ceramics. You can modify and access these additional programs by pressing the SET button which will show STEP 1. You can then press the up arrow key to decide at which point you would like your firing profile to start.

Let's say you have just entered the previous program which has 6 steps (consisting of SP and t values). In order to add a second program you would press the SET button and press the up arrow to get to STEP 7 and then press set again to select. You have now told the controller you want your program to start from STEP 7 so now you would use the programming instructions shown in the previous step the same way to enter in your desired program and just run as usual.

Now if you wanted to add another program you would do the same thing. If you wanted to move back to the start of the first program you just need to press SET and use the down arrow to return to STEP 1

PROGRAMS

Programs are based on the effect of 'Heat Work' which is the combination of heat and time that will turn pieces of clay into their finished ceramic form. This is the Orton Cone Chart which serves as a good reference to the relationship between time and temperature can achieve the same heat work, cones are a good litmus test for what your ceramics pieces are experiencing inside the kiln. As always, we recommend doing your own research and going off the manufacture recommendations for the glaze and clays you are using as these will be the best place to start when choosing your firing schedule. The internet can be an excellent source of information.

	Self Supporting Cones						Large Cones				Small
	Regular			Iron Free			Regular		Iron Free		Regular
	Heating Rate °C/hour (last 100°C of firing)										
Cone	**15**	**60**	**150**	**15**	**60**	**150**	**60**	**150**	**60**	**150**	**300**
022		586	590				N/A	N/A			630
021		600	617				N/A	N/A			643
020		626	638				N/A	N/A			666
019	656	678	695				676	693			723
018	686	715	734				712	732			752
017	705	738	763				736	761			784
016	742	772	796				769	794			825
015	750	791	818				788	816			843
014	757	807	838				807	836			870
013	807	837	861				837	859			880
012	843	861	882				858	880			900
011	857	875	894				873	892			915
010	891	903	915	871	886	893	898	913	884	891	919
09	907	920	930	899	919	928	917	928	917	926	955
08	922	942	956	924	946	957	942	954	945	955	983
07	962	976	987	953	971	982	973	985	970	980	1008
06	981	998	1013	969	991	998	995	1011	991	996	1023
05½	1004	1015	1025	990	1012	1021	1012	1023	1011	1020	1043
05	1021	1031	1044	1013	1037	1046	1030	1046	1032	1044	1062
04	1046	1063	1077	1043	1061	1069	1060	1070	1060	1067	1098
03	1071	1086	1104	1066	1088	1093	1086	1101	1087	1091	1131
02	1078	1102	1122	1084	1105	1115	1101	1120	1102	1113	1148
01	1093	1119	1138	1101	1123	1134	1117	1137	1122	1132	1178
1	1109	1137	1154	1119	1139	1148	1136	1154	1137	1146	1184
2	1112	1142	1164				1142	1162			1190
3	1115	1152	1170	1130	1154	1162	1152	1168	1151	1160	1196
4	1141	1162	1183				1160	1181			1209
5	1159	1186	1207				1184	1205			1221
5½	1167	1203	1225				N/A	N/A			N/A
6	1185	1222	1243				1220	1241			1255
7	1201	1239	1257				1237	1255			1264
8	1211	1249	1271				1247	1269			1300
9	1224	1260	1280				1257	1278			1317
10	1251	1285	1305				1282	1303			1330
11	1272	1294	1315				1293	1312			1336
12	1285	1306	1326				1304	1324			1355
13	1310	1331	1348				1321*	1346*			N/A
14	1351	1365	1384				1388*	1366*			N/A

Earthenware/Stoneware Bisque (Cone 06) Firing schedule		
Temperature (C)	**Time (T)**	**Step**
25	150	1
250	250	2
880	60	3
980	20	4
980	-121	5

Bisque

This is a multi-purpose bisque program for Earthenware, Midfire and Stoneware ceramics pieces.

Midfire Glaze (Cone 6)		
Temperature (C)	**Time (T)**	**Step**
25	200	1
1000	60	2
1150	80	3
1234	10	4
1234	-121	5

Midfire

A generic Cone 6 midfire program that previous users have found success with. Feel free to modify.

EarthenWare Glaze (Cone 3)		
Temperature (C)	**Time (T)**	**Step**
25	250	1
980	60	2
1080	20	3
1080	-121	4

Earthenware

A generic Cone 3 Earthenware program that previous users have found success with. Feel free to modify.

StoneWare/Porcelain Glaze (Cone 9)		
Temperature (C)	**Time (T)**	**Step**
25	260	1
1000	60	2
1160	60	3
1260	10	4
1260	-121	5

Stoneware

This is a cone 9 stoneware firing program. Please note all listed schedules here are quite fast given the smaller size of the kiln.

ALARM PROGRAMMING

Your **Easy Kiln 20L** comes fitted with an alarm that is activated by the controller when certain conditions in your program are met. There are four alarm condition settings: 'uPAL', 'LoAL', 'ESAL' and EIAL'. 'uPAL' and 'LoAL' are the high and low **measured temperatures** at which the alarm is activated. Whereas 'ESAL' and 'uPAL' are the high and low **set temperatures** at which the alarm is activated.

By default the alarm is only activated by the **t** value **-0.1**. In order to access the **Alarm** hold down the **SET** button for 2 seconds.

You will see the first parameter **uPAL** which is set to 3200 by default. This is the high limit alarm. If the temperature of the firing profile goes about this value the alarm will activate. Let's say for example you want to melt some gold metal. You may set **uPAL** as 1080c (your program may run to 1100c) which would allow time for you to prepare to cast.

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Similarly **LoAL** is the low limit alarm. This is set by default to -999c. This parameter allows you to set a measured temperature low at which the alarm will activate. This may be used if you are waiting for the kiln to cool off and want to be alerted when it passes a certain threshold such as the recommended 100c at which ceramics pieces can be removed.

ESAL refers to high **SET VALUE** so it will activate when the kiln's program passes a certain temperature rather than the actual measured temperature.

EIAL refers to low **SET VALUE,** it will activate when the kiln passes below a certain low value.

Additional info and troubleshooting

If you would like further clarification or detailed technical info on your Easy Kiln and Maxwell controller please look at the included Maxwell Technical Manual which should have been provided with your kiln. All manuals and technical documents are also available on our website at

easykilns.com.au

If you are at all confused with any of the instructions for your Easy Kiln please don't hesitate to contact us by phone, email or messenger.

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