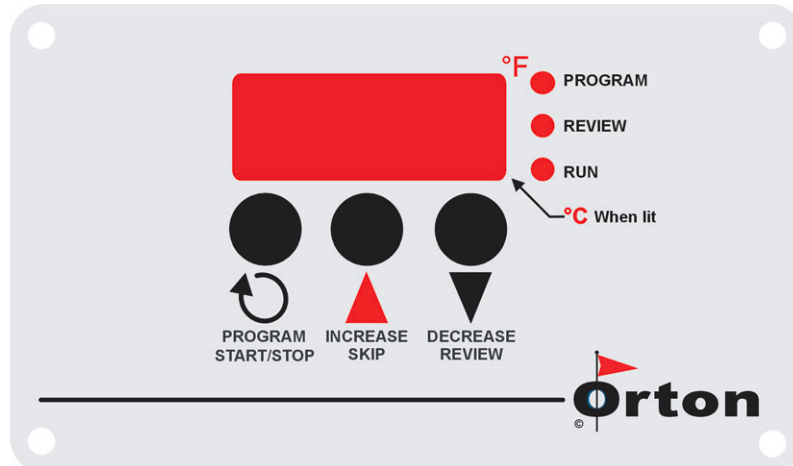




Orton Ceramic Foundation - 6991 Old 3C Highway, Westerville, OH 43082-9026
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AF-3 Speed Controller



PROGRAM
START/STOP

Left button;

Select a Program or
Start a firing or
Stop a firing.



INCREASE
SKIP

Middle button;

Increase values in the display or
Skip Step during a firing.



DECREASE
REVIEW

Right button;

Decrease values in the display or
Review the program being used.

When using the increase and decrease buttons to change number values, the values will change rapidly if the button is held in.

Programming Temperature Values: Temperature values can be displayed and programmed in degrees Fahrenheit or Celsius. If the bottom right decimal point is lit on the display, temperature values are °C, if the decimal point is not lit, temperature values are °F.

Changing the Temperature Display: The temperature display can be changed from °F to °C by removing the jumper (JPR1) on the back of the controller. Refer to the wiring diagram included with these instructions to locate the jumper position.

Temperature Measurement: The controller measures and controls temperature from a single Type K thermocouple probe. Thermocouple probes extend into the firing chamber to measure the temperature. Use caution to avoid damage to the thermocouple. If the probe is damaged, the controller will not function.



Programming Hold Time Values: Time is entered in Hours.Minutes format. The decimal point between the 2 left display segments and the two right display segments separate hours and minutes. 1hr and 20 minutes = 01.20 on the display.

Programming Ramp Rate Values: Temperature rise or drop is entered in degrees per hour. If the controller is configured to display temperature in °F, the programmed ramp rate is °F/hour. If the controller is configured to display temperature in °C, the programmed ramp rate is °C/hour.

Status Indicator Lights: 3 lights are located to the right of the display.

- Ⓞ Program lit during programming and Program Review.
- Ⓞ Review lit during Program Review.
- Ⓞ Run blinks when the controller is in firing mode.

CONTROLLER FEATURES

<i>PID Control</i>	Accurate control with minimum temperature cycling
<i>8 Step Ramp/Hold</i>	One Ramp/Hold program
<i>Maximum Temperature</i>	Factory set up to 1300°C / 2372°F
<i>Preset Programs</i>	Speed1 thru Speed5
<i>Temperature Units</i>	Fahrenheit or Celsius
<i>4 Digit Display</i>	Front panel display
<i>3 Status LED's</i>	Front panel display
<i>Program Review</i>	Displays current program
<i>Delay Start</i>	Programmable in Hours.Minutes
<i>Skip Step</i>	Skips to the next ramp when firing Ramp/Hold program
<i>Set-Point Control</i>	Program to hold indefinitely
<i>Rapid Heat/Cool</i>	Full power heating or cooling rates
<i>Power Recovery</i>	Resumes firing when power is restored.
<i>Diagnostics</i>	Audible Alarm and display codes
<i>Thermocouple Type</i>	K

ALARMS

Display alarms indicate why a firing was terminated.

FtL	Firing To Long [FtL] - kiln is not increasing in temperature by more than 27°F/Hr (15°C/hr) and the firing time is 4 hours longer than programmed
EtH	Electronics Too Hot [EtH] - electronics temperature exceeds 185°F (85°C)
tCO	ThermoCouple Open [tCO] - Thermocouple not detected / controller idle.
tCr	ThermoCouple Reversal [tCr] - Thermocouple connected incorrectly.
PF 1	Power Failure #1 [PF 1] - Temperature dropped more than 212°F (100°C)
PF 2	Power Failure #2 [PF 2] - Temperature is below 212°F (100°C)
FAI L	Thermocouple FAIL [FAIL] - Thermocouple not detected / controller running.




Power Fail Recovery: A firing will resume when power is restored if the temperature is above 100°C (212°F) and the temperature drop is less than 100°C (212°F). If these conditions are not met, one of the two Power failure alarms will terminate the firing.


DISPLAY MESSAGES

CpLt	[CpLt] - Firing is complete. Alternates with final temperature, current temperature and firing time. <i>Controller beeps for 30 seconds to indicate firing is complete.</i>
dELA	[dELA] - Delay start mode. Alternates with remaining delay time during a firing.
FULL	[FULL] Full ON or Full OFF- Rate programmed at 9999°C/hour or 1799°F/hour.
IdLE	[IdLE] - Controller Idle Mode. Not running a program. Not in programming mode.
-On-	[-On-] - Firing program is running.
PrOG	[PrOG] - Ramp/hold Program
SStP	[SStP] - Advance to the next ramp segment
StOP	[StOP] - Firing was stopped – Alternates with current temperature and firing time.
Strt	[Strt] - Controller is ready to be started.
°F 1	[°F 1] - Ramp/Hold program temperature. °F 1 thru °F 8
°C 1	[°C 1] - Ramp/Hold program temperature. °C 1 thru °C 8
HLd 1	[HLd 1] - Ramp/Hold program dwell time. HLd1 thru HLd8
rA 1	[rA 1] – Ramp/Hold program heating/cooling rate. rA 1 thru rA 8

Programming for Set-Point Control: The controller can be programmed to hold at a set-point temperature indefinitely. This is achieved by setting the Hold time value to 99 hours and 59 minutes [99.59]. The controller will remain at the set-point temperature until the STOP button is pressed.

Program Review : To check the current program in active memory, press  at any time. The program will be displayed temporarily.

DECREASE
REVIEW

Skip Step: During a Ramp/Hold program, press  to skip to the next ramp.

















INCREASE
SKIP

[SStP] shows in the display alternating with the current ramp segment. To skip, press the skip button again.



RAMP/HOLD PROGRAMMING

You can enter a Ramp/Hold program with up to 8 Segments or Steps. Each Segment contains a Heating/Cooling rate, Target temperature and a Hold Time.














1. Press  to enter programming mode from **IdLE**.
PROGRAM START/STOP
2. Press  until **[PrOG]** is displayed. Press  to select **[PrOG]**.
INCREASE SKIP **PROGRAM START/STOP**
3. **[rA 1]** alternates with the programmed ramp rate. Use  or  to change the heating rate value. Press  to continue.
INCREASE SKIP or **DECREASE REVIEW** **PROGRAM START/STOP**
4. **[°F 1]** or **[°C 1]** alternate with the set-point temperature. Use  or  to change the set-point temperature – Press  to continue.
INCREASE SKIP or **DECREASE REVIEW** **PROGRAM START/STOP**
5. **[HLd1]** alternates with the programmed hold time.
Use  or  to enter time (Hours.Minutes) – Press  to continue.
INCREASE SKIP or **DECREASE REVIEW** **PROGRAM START/STOP**
6. Repeat steps 3, 4 and 5 for additional segments 2 thru 8. Entering [0000] for a ramp rate, zeros out the remaining segments and exits the programming.
7. **[Strt]** is displayed
8. For access to delay start, Press  **[dELA]** is displayed alternating with time.
Use  or  to enter the delay time (Hours.Minutes).
DECREASE REVIEW **INCREASE SKIP** or **DECREASE REVIEW**
9. Press  to start the firing.
PROGRAM START/STOP



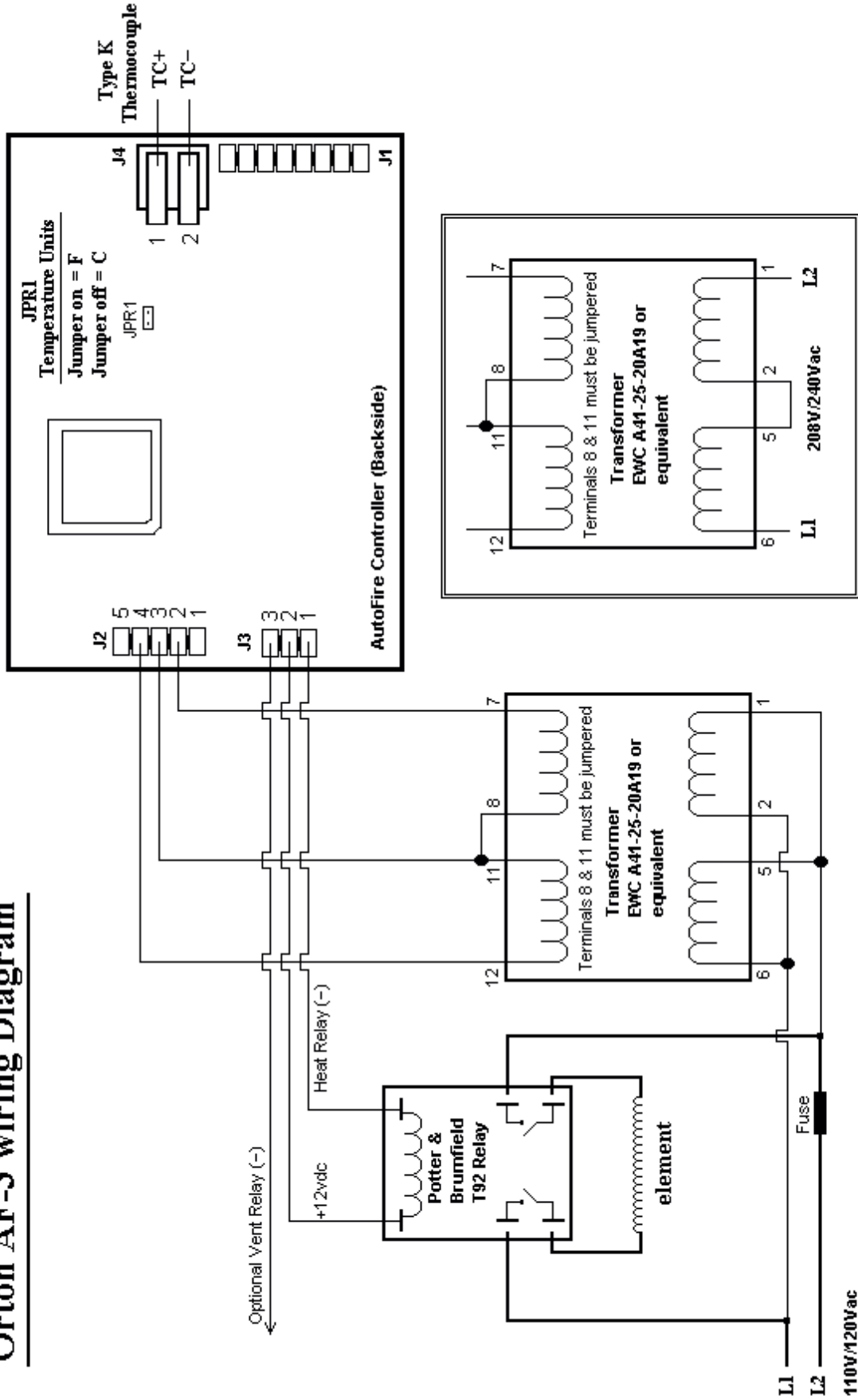
SPEED PROGRAMMING

You can fire to a single temperature using one of 5 preset speeds

SPd1	200°F/hour	(111°C/hour)
SPd2	500°F/hour	(278°C/hour)
SPd3	1000°F/hour	(555°C/hour)
SPd4	1500°F/hour	(833°C/hour)
SPd5	Full Power	

1. Press  to enter programming mode from **IdLE**.
PROGRAM START/STOP
2. Press  until the desired speed program is displayed.
INCREASE SKIP
3. Speed number alternates with the preset ramp rate. Press  to continue.
PROGRAM START/STOP
4. °F or °C is displayed alternating with the programmed temperature. Use  or  to change the set-point temperature. Press  to continue.
INCREASE SKIP or **DECREASE REVIEW**
PROGRAM START/STOP
5. **[HLd]** alternates with the programmed hold time.
Use  or  to enter time (Hours.Minutes) – Press  to continue.
INCREASE SKIP or **DECREASE REVIEW**
PROGRAM START/STOP
6. **[Strt]** is displayed
7. For access to delay start, Press  **[dELA]** is displayed alternating with time.
DECREASE REVIEW
Use  or  to enter the delay time (Hours.Minutes).
INCREASE SKIP or **DECREASE REVIEW**
8. Press  to start the firing.
PROGRAM START/STOP

Orton AF-3 wiring Diagram





WARRANTY

The Orton Ceramic Foundation warrants the controller to be in good working order for a period of one (1) year from the date of purchase. If the product fails to work, due to materials or workmanship, at any time during this one year period, Orton will, at its option, repair or replace this product as set forth below.

The liability of the Orton Ceramic Foundation is limited to replacement and/or repair of the controller, at its factory, that does not remain in good working order, under normal operating conditions. Repair parts or replacement products will be furnished on an exchange basis and will be either reconditioned or new. All replaced parts and products become the property of Orton Ceramic Foundation.

Limited warranty service may be obtained by delivering the unit during the one (1) year warranty period to THE ORTON CERAMIC FOUNDATION, 6991 OLD 3C HIGHWAY, WESTERVILLE OH 43082-9026, USA and providing written proof of purchase and description of defect or problem. The buyer must insure the unit or assume the risk of loss or damage in transit, prepay shipping charges to the service location, and use the original shipping container or equivalent. The buyer will be invoiced for shipping and handling charges incurred in returning the unit after service.

Service may also be obtained on units no longer under warranty by returning unit prepaid to Orton with a description of the problem, and the buyer's name, address, and telephone number. The buyer will be contacted with an estimate of the service charges before any work is performed.

All express and implied warranties for this product including the warranties of merchantability and fitness for a particular purpose are limited in duration to a period of one (1) year from the date of purchase and no other warranty, whether expressed or implied, will apply after this period.

This warranty does not apply to the thermocouple and does not apply to any damage resulting from:

1. Over-firing (melting of materials being fired) regardless of cause.
2. Operation beyond electrical rating including overloading or shorts in user equipment.
3. External sources including chemicals, heat abuse, and improper use.
4. Improper or inadequate maintenance by the user.
5. Parts or equipment not supplied by Orton Ceramic Foundation.
6. Unauthorized modification or misuse.
7. Operation outside environmental specifications.
8. Improper installation.

Units returned for service where no defect is found will be subject to a service fee.

If this product is not in good working order as warranted above, your sole remedy shall be repair or replacement as provided above. In no event will Orton Ceramic Foundation be liable for any damages, including any lost profits, lost savings, or other incidental or consequential damages arising out of the use of or inability to use such a product even if Orton Ceramic Foundation has been advised of the possibility of such damages, or for any claim by any other party.

The above limitation of liability does not apply in the event that any Orton Ceramic Foundation control product is determined by a court of competent jurisdiction to be defective and to have directly caused bodily injury, death or property damage; provided, that in no event shall Orton's liability exceed the greater of \$1000 or the purchase price of the specific product that caused such damage.

SERVICE

Should your controller require service, please contact your kiln manufacturer or call Orton at 1-614-895-2663. Do not return any unit to Orton without first calling and obtaining an RMA No.

When returning, wrap the controller in protective packaging, and securely pack in sturdy box. Ship the unit prepaid to Orton with a complete description of defect or problem and your name, address, and telephone number. Upon receipt by Orton, the unit will be examined and any defective or damaged parts will be repaired or replaced. For units not under warranty an estimate will be provided before repair.