Febris Programming with RMPATE Software
(No Delay)

General Information

The Model 3K controller with RMPATE software has four User programs. Each program can have up to eight segments with each segment consisting of a ramp rate (in degrees per hour), a target temperature, and a hold time. Programming consists of choosing the User program (1, 2, 3, or 4), choosing how many segments you want (up to 8), then programming the ramp (rA), temperature (ºF), and hold time (HLD) for each segment.

Programming the Febris Controller

When the power is first turned on either ErrP or IdLE alternating with the current temperature will be displayed.
ErrP indicates the power has been off for several hours. Press the up arrow to clear this message.
If **IdLE** alternating with the **current temperature** is displayed, you are ready to begin programming.
Press **ENTER** to begin.
The previously fired program will be displayed, either USr1, USr2, USr3, or USr4.
Select the user number you want to program by using the UP and DOWN keys, and press ENTER.
SEG alternating with the last selected number of segments is displayed. Use the UP and DOWN keys to select the number of segments, then press ENTER.
> **NOTE:** Each segment consists of a ramp rate to a temperature and a hold time. There are 8 segments available for programming.

rA 1 alternates with the ramp rate (º/hr). Use the UP and DOWN keys to select the desired rate and press ENTER. A rate of 9999 will cause the kiln to heat (or cool if in a down ramp) at maximum rate. **The first segment must always be an "up" ramp.**
ºF 1 alternates with the currently selected temperature. Use the UP and DOWN keys to select the desired temperature for this segment and press ENTER.
HLd1 alternates with the currently selected hold time. Use the UP and DOWN keys to select the desired hold time for this segment and press ENTER.
This completes programming for the first segment. If more than one segment was chosen then rA2 will be displayed and you repeat the steps for ramp rate, temperature, and hold time for each additional segment selected.
rEdl will be displayed after the last segment is entered.
Press **ENTER** to begin firing.

Firing Example: Tack Fuse Glass Firing Program programmed in User 1 with no delay

This is a fast tack fuse firing for small pieces of glass. It consists of four segments, two with increasing temperatures and two with decreasing temperatures. Segment 1 raises the temperature to 750º in about an hour. Segment 2 raises the temperature a little more slowly up to the tack temperature (1350º). Segment 3 rapidly lowers the temperature to 1000º for the annealing process. If the temperature for segment 3 (ºF 3) is lower than the temperature for segment 2 (ºF 2) that signifies a down ramp. Segment 4 is a slow ramp through the annealing range.

Segment	Rate (º/hour)	º F	Hold time (hours.minutes)
1	750	750	00.10
2	500	1350	00.15
3	9999	1000	00.30
4	200	975	00.15

To program this example (from idle):

1   Press ENTER - the display will show Usrx, where "x" is the last fired program number.
2   Use the arrow keys to adjust "x" to 1 for user 1
3   Press ENTER - SEG/000x will be displayed, where "x" is the number of segments previously in the program.
4   Use the arrow keys to display 4

5   Press ENTER - the display will show rA 1/xxxx, where "xxxx" is the last saved rate for ramp one.

6   Use the arrow keys to adjust the rate to 750

7   Press ENTER - the display will show ºF 1/xxxx, where "xxxx" is the previous segment 1 temperature.

8   Use the arrow keys to adjust the temperature to 750

9   Press ENTER - the display will show HLd1/xxxx, where "xxxx" is the last saved hold time.

10   Use the arrow keys to adjust to 00.10 for a 10-minute hold time

11   Press ENTER - the display will show rA 2/xxxx

12   Repeat steps 6 - 12 filling in the information for each additional segment from the table.

To re-fire the last used program, press the DOWN key when **IdLE** is displayed. The program will be quickly reviewed and **rEdl** will be displayed. If the down arrow is pressed twice the controller will go directly to **rEdl**. Press START to begin the firing.

Options During Firing

During a firing you may advance from the current segment to the next ramp rate by using Skip Step. If you are in a hold period you may add time or add temperature to the hold period.

Displaying the current set-point and accessing the following options When the UP key is pressed during a firing the current ramp or hold is displayed followed by the current or traveling set-point, then "SStP" is displayed. If you do not press a key within several seconds the display will return to showing the current temperature in the kiln.

Skip Step This option allows you to skip from the present segment to the next ramp rate. Press the UP key. The display will show the current segment, then the set-point, then "SStP". When "SStP" is displayed press ENTER to skip to the next ramp rate.

Add Time to Hold Period This option allows you to add time in 5 minute increments to a hold (soak) period. When in a hold period (during a hold or soak, the temperature in the kiln will be alternating in the display with the remaining hold time), press the UP key. When "SStP" is displayed press the UP key again and "tME" will be displayed. Press ENTER and 5 minutes will be added to the hold time. You may use this procedure as many times as necessary to get the hold time that you want.

Add Temperature to Hold Period This option allows you to add temperature in 5 degree increments to a hold (soak) period. When in a hold period (during a hold or soak, the temperature in the kiln will be alternating in the display with the remaining hold time), press the UP key. When "SStP" is displayed press the UP key twice more and "tMP" will be displayed. Press ENTER and 5 minutes will be added to the hold time. You may use this procedure as many times as necessary to get the hold temperature that you want.

Error Codes

Err1 Error 1 indicates the temperature in the kiln is rising during an up ramp slower than 15ºF/hr. If this rate continues for 8 minutes the firing will be stopped. Err1 may be an indication that the elements are worn or that a relay has stopped working.

ErrF Error F indicates the temperature in the kiln is decreasing during a down ramp less than 15ºF/hr. If this rate continues for 8 minutes the firing will be stopped. ErrF may be an indication that a relay has stuck in the on position.

Errd Error d indicates that the kiln temperature is 100ºF above the traveling set-point, which is the current desired temperature in the kiln. The traveling set-point will increase or decrease according to the programmed rate. Errd may indicate a relay stuck in the "on" position or a problem with a thermocouple not reading correctly.

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ErrP ErrP is displayed whenever there is a power interruption that is long enough to stop the firing. If the power interruption is brief the kiln will continue to fire when power is restored; in this case there will be no indication of a power failure. To clear the error, press any key.

tC FAIL tC alternating with FAIL indicates the thermocouple has failed. Replace the defective thermocouple. To clear the error, press any key.

tC- - The red and yellow thermocouple wires are reversed.

Display Messages

CPLt Firing Cycle Complete (firing time is alternately displayed).
ºF # Segment temperature in ºF – Set temperature for a user program.
ºC # Segment temperature in ºC – Set temperature for a user program. A decimal point will display in lower right corner.
EdIt Edit the default options (beeping at complete, temperature scale, maximum programmable temperature)
Err1 Error 1, kiln was heating less than 15º/hr and it has been stopped.
Errd Error d, kiln temperature is 50º hotter than the set-point temperature. Kiln has been stopped.
ErrF Error F, similar to Err1 but during a down ramp the temperature is decreasing less than 15º/hr. Kiln has been stopped.
ErrP There has been a power interruption that has stopped the firing. Press any key to clear.
FULL Beeps continuously at end of firing until a key is pressed.
HLd# Soak time in hours:minutes at a hold temperature.
IdLE The kiln is at idle and ready to be programmed. IdLE alternates with the current kiln temperature.
OFF No beeping when firing is complete.
On Beeps for 15 seconds at end of firing.
rA # Ramp Number (rate per hour of temperature increase or decrease).
rEdl Ready to fire current program. Press START to begin firing.
SEG Short for Segments. You can enter up to 8 segments in a program.
SStP Skip Step (used to advance to the next ramp)
StOP Will be displayed briefly when the firing has been stopped.
USr # User program number displayed