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# Sentry Xpress Cone-Fire / Ramp-Hold Update Sheet

Thank you for buying a Sentry Xpress controller. It includes exciting new features that are not yet in the instruction manual. Please read this sheet and your manual.

## A Change in Programming Instructions

The new controller can store 4 custom Ramp-Hold programs in memory. The earlier controller stored only 1 program. In the boxed programming instructions on pages 6 and 8 of the manual, step 2 shows PrOG (Ramp-Hold) and COne (Cone-Fire) as program choices. Since the new controller can store 4 Ramp-Hold programs, we replaced the PrOG message with PrO1, PrO2, PrO3, and PrO4 (programs 1 - 4). (See updated instructions on back page.)

Do not worry if you hear a clicking noise during operation. Mechanical relays click as they turn the heating elements on and off.

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## Four Programs in Ramp-Hold

The new controller can store 4 Ramp-Hold programs in memory even when power is turned off. Programs are numbered PrO1 - PrO4.

The first message to appear after you plug in your Sentry Xpress is **IdLE**. Press **START**. Then press the **Up Arrow** key several times. You will see a series of messages: **COne**, **PrO1**, **PrO2**, **PrO3** and **PrO4**.

To use Ramp-Hold mode for the first time, select **PrO1**. You do that by pressing the **START** key after **PrO1** appears. Then follow the instructions on the back page of this update sheet to enter temperatures, heating rates, etc.

**PrO1** is Program 1. When you fire the kiln again, you can repeat Program 1 by selecting **PrO1**. When you are ready to fire a different program, select **PrO2**, which is Program 2. Then enter temperatures, heating rates, etc. Select Program 3 and 4 the same way.

To over-write a program, select it and enter new rates and temperatures. This automatically over-writes the previous program. Write down your programs in a notebook and record firing results for all firings.

## Ramp-Hold: Skip Segment

Please ignore the Skip Segment instructions on page 8 of your manual. We have changed the instructions:

Skip Segment jumps the firing from the current segment to the next one.

- 1 During a Ramp-Hold firing, press the **Up Arrow**.
- 2 **SStP** will appear.
- 3 Press **START**. The current segment ramp or hold number will appear.

- 4 Press **START** again. (If you change your mind and don't want to skip that segment, don't press **START** after **SStP** appears. The firing will continue in the same segment and the temperature will appear after one minute.)

Skip Segment skips to the ramp of the next segment from either a ramp or hold of the current segment. (Skip Segment does nothing during the final segment. To end the final segment, press **STOP**.)

### Skip Segment Example

**Skipping to a Cooling Segment:** You have programmed a target temperature of 1425°F for glass fusing, followed by a segment for controlled cooling. Watching the glass through the peephole, you notice that the glass edges have rounded nicely at 1315°. Use Skip Segment to end the firing segment and to begin the one for slow cooling.

*Note: Make a note of the temperature at which the glass fused. Program that temperature for the next firing of that type of glass.*

## Ramp-Hold: Add Hold Time

Add Hold Time adds 5 minutes to a hold. It is designed for ceramists who watch witness cones and for glass artists who inspect the glass near the end of firing.

- 1 During either Ramp-Hold or Cone-Fire, press the **Up Arrow** repeatedly until **HLdt** appears.
- 2 Press **START**. The hold time for the current segment will appear.
- 3 Press the **Up Arrow**. Each time you press the **Up Arrow**, the hold time will increase by 5 minutes.
- 4 Press **START**. The normal temperature will appear.

*Note: Add Hold Time will add 5 minutes to a hold even if no hold had been programmed.*

## Ramp-Hold: Editing the Target Temperature

While the kiln is firing, you can change the target temperature. You can edit only the segment that is firing. So if the first segment is the current one, you can edit only the first segment. To edit other segments, wait until the firing has progressed to those segments.

Even if the current segment has already started its hold time, you can still edit the segment's target temperature. The controller will go back out of hold and fire to the new target temperature at the original rate. (You cannot edit the rate, however.)

- 1 During a Ramp-Hold firing, press the **Up Arrow** repeatedly until **CHGt** appears.
- 2 Press **START**. The target temperature for the current segment will appear.
- 3 Use the arrow keys to change the target temperature.
- 4 Press **START**. The normal kiln temperature will appear.

## Ramp-Hold & Cone-Fire: The Alarm

While the kiln is firing, you can set the alarm, which sounds when the kiln reaches the alarm temperature. Use the alarm as a reminder to look at the glass during fusing or slumping, to look at witness cones, to close the lid from vented position, etc.

You can enter only one alarm temperature at a time. However, after the alarm beeps, you can set the alarm for another temperature, as many times as you want, during the firing. Entering an alarm temperature automatically erases any previous alarm temperature.

**Note:** *The alarm temperature that you set during a firing must be higher than the current display temperature. The alarm is designed only for higher temperatures and not for cooling temperatures.*

- 1 During a firing, press the **Up Arrow** repeatedly until **ALAr** appears.
- 2 Press **START**. The current alarm temperature will appear.
- 3 Use the arrow keys to change the alarm temperature.
- 4 Press **START**. The normal kiln temperature will appear.

To silence the alarm when it sounds, press any key.

**Note:** *If you do not want to use the alarm, set the alarm temperature to 32°F / 0°C. This setting will turn off the alarm feature.*

## New Display Messages

**ALAr** Ready for you to enter an alarm temperature. When the kiln reaches that temperature, the alarm will sound. (**ALAr** also flashes when the alarm sounds.)

**CHGt** Ready for you to edit the target temperature of the current Ramp-Hold segment during firing. Example: You are fusing glass to a temperature of 1450°F. At 1445°F, you look at the glass through a peephole and realize that the glass will need at least another 50° to fuse fully. Change the target temperature to 1500° without having to turn off the kiln to reprogram it.

**HLdt** Add Hold Time: During a firing, you can extend the hold time of a segment without having to first stop the firing to reprogram the controller.

**Pr01** **Pr02** **Pr03** **Pr04** These are Ramp-Hold programs stored in memory.

**TCOS** Thermocouple Offset: Adjust the controller to fire hotter or cooler.

## New or Changed Error Messages

### FE Error Messages

Message	Problem
FE 1	Memory Read/Write Failure
FE 2	RAM Failure
FE 3	OEM Factory Data Corruption
FE 4	Thermocouple "Noise"
FE 5	Software Error

#### To return to **IdLE** from an FE code

Try pressing any key. If that doesn't work, turn the power off for 10 seconds. Call the factory if the error message remains when you turn the power back on.

If you get an **FE 4** message, check the wire connections going from the back of the controller to the thermocouple. A loose connection can cause the **FE 4** message.

### FtL / Fired Too Long

This message appears when both of the following conditions are met:

- The temperature rise or fall is less than 27°F / 15°C per hour.
- The firing is 2 hours longer than programmed.

Programming a cooling segment target temperature that is below or even close to room temperature can also trigger the **FtL** message.

See “Controller display turns on. No heat in kiln,” page 12 of the manual.

## HtdE / High Temperature Deviation

Causes:

- During a heating-up ramp or a hold, the temperature is 100°F / 56°C above the programmed temperature.
- During a cooling-down segment, the temperature is 100°F / 56°C higher than the segment’s starting temperature.
- A fast rate caused the controller to overshoot the target temperature.

Also, check for a stuck relay.

## PF 1 / Power Failure

The power failed during a cooling segment, and the kiln cooled past the target temperature while the power was off. The kiln will not resume firing. To return to the **IdLE** display, press any key.

## PF 2 / Power Failure

The power failed during firing and kiln temperature was below 212°F / 100°C when the power came back on. The kiln will not resume firing. To return to the **IdLE** display, press any key.

## PF 3 / Power Failure

The power failed during firing and temperature dropped more than 72°F / 40°C by the time the power came back on. The kiln will not resume firing. To return to the **IdLE** display, press any key.

## tCL / Thermocouple Lag

The heating rate is slower than 9°F / 5°C per hour and the controller temperature is more than 100°F / 56°C away from the actual kiln temperature. To return to the **IdLE** display, press any key. Causes:

- On kilns that use a portable controller, the thermocouple has fallen out of the firing chamber.
- A bare spot on the thermocouple lead wires has touched a grounded object inside the kiln switch box causing the thermocouple to short out.

Check for worn or burned out elements, defective relays, low voltage and defective thermocouple.

# Thermocouple Offset

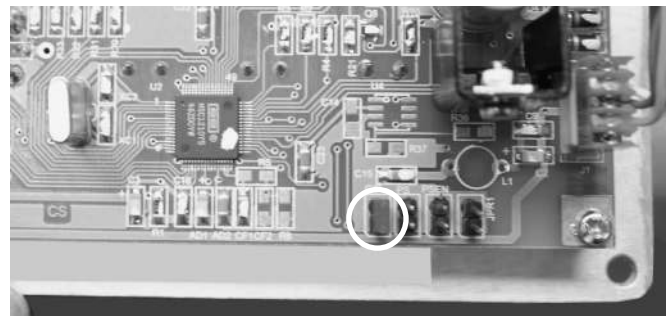
You can adjust the controller to fire up to 20°F / 11°C hotter or cooler than the zero factory setting.

- 1 From **IdLE**, press the **Down Arrow** key. After rate, temperature, hold, etc., **Strt** will appear.
- 2 With **Strt** shown in the display, press the **Up Arrow** key.
- 3 **tCOS** will appear. Press the arrow keys to change the controller temperature.
- 4 Press the **START** key to return to the **Strt** display.
- 5 To fire the controller, press **START**. **-On-** will appear. Or to return to **IdLE**, press **START** two more times.

# Selecting °F or °C Display

The controller can display temperature in either °F or °C. If your controller shows a small display dot in the lower right corner of the display, the temperature shown is °C. No dot means °F. To change temperature display:

- 1 UNPLUG kiln or disconnect power.
- 2 Remove the 4 screws that hold the controller to the kiln. Carefully remove the controller from the kiln. Leave wires attached to the controller.



- 3 Look at the back of the controller. You will find a set of connector pins near the bottom labeled “C/F.” When a jumper is placed on the C/F pins, the display reads °F. When the jumper is removed, display reads °C. Remove or insert the jumper as desired. (You can purchase the jumper from a computer supply store if necessary.)
- 4 Install the controller being careful not to jar components on the back of the controller against the kiln case.

## Ramp-Hold Programming Instructions

**Note:** You have up to 8 segments available in Ramp-Hold. If you don't need all 8, zero out the unused segments. See step 6 below.

- 1 From **IdLE**, press **START**.
- 2 Press the **Up Arrow** key (not the **Down Arrow**). **PrO1** **PrO2** **PrO3** and **PrO4** are Ramp-Hold programs. When the one you want appears, press **START**. (Ignore **COne**.)
- 3 **rA 1** will appear. Enter firing rate (temperature change per hour) for segment 1. (1° = slowest rate. 1799°F / 999°C = full power.) Then press **START**.
- 4 **°F 1** or **°C 1** and the target temperature from the last firing will appear. Use the arrow keys to change the temperature. Then press **START**.
- 5 **HLd 1** and the hold time from the last firing will appear (Example: 1 hour, 10 minutes = 01.10). Use the arrow keys to change the hold time. Then press **START**. (No hold = 00.00)
- 6 Continue entering values for the segments needed. When **rA** appears for the next segment that you don't need, select **0000**. Then press **ENTER**. This will zero out the remaining segments. (Example: You need only 1 segment. When **rA 2** appears, enter **0000**.)
- 7 **Strt** will appear. Press **START** to begin firing. **-On-** will appear and the Run indicator light will begin blinking. The kiln is now firing.

To stop a firing before completion, press **START/STOP**. **StOP** will appear, alternating with total firing time and kiln temperature.

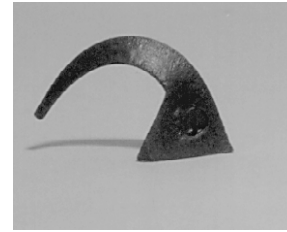
**Note:** Do not be concerned if your kiln makes a clicking sound during firing. Kilns use relays to power the elements. The relays click each time their electrical contacts come together.

**Note:** The kiln's actual firing rate may be less than the rate you programmed, depending on the kiln model, available voltage, and density of the load you are firing.

When the kiln fires to completion, it will beep for 30 seconds. The display will show the following:

- Firing time
- Present temperature
- **CPLt** = Fired to completion

To return to **IdLE**, press **START**.



## Cone-Fire Programming Instructions

- 1 From **IdLE**, press **START**.
- 2 Using the **Up Arrow** key (not the **Down Arrow**), skip past **PrO1** **PrO2** **PrO3** **PrO4** and select **COne**. Then press **START**.
- 3 The last pyrometric cone you fired, and its temperature, will appear. Use the arrow keys to change the cone number. Then press **START**.
- 4 **SLO** (slow) **Ed** (medium) or **FAST** will appear. Use the arrow keys to change speed. Then press **START**.
- 5 **HLd** and the hold time from the last firing will appear. (Example: 1 hour and 10 minutes = 01.10) Use the arrow keys to change the hold time. Then press **START**.
- 6 **Strt** will appear. Press **START**. **-On-** will appear, the Run indicator light will begin blinking, and the kiln will begin firing.

To stop a firing before completion, press **START/STOP**. **StOP** will appear, alternating with kiln temperature.

**Note:** Do not be concerned if your kiln makes a clicking sound during firing. Kilns use relays to power the elements. The relays click each time their electrical contacts come together.

**Note:** The kiln's actual firing rate may be less than the rate you programmed, depending on the kiln model, available voltage, and density of the load you are firing.

When the kiln fires to completion, it will beep for 30 seconds. The display will show the following:

- Firing time
- Present temperature
- **CPLt** = fired to completion

To return to **IdLE**, press **START**.