

# Operating Instructions for Swest 160-923, 160-926, 160-928, and 160-930 Temperature Controllers

## Getting Started

*CAUTION: Keep your Swest controller at least 12" from your furnace.*

### ErrP and IdLE Displays

The normal message that appears when you first plug in your Swest controller is ErrP. ErrP also displays after a power failure of over 1 ½ hours.

Before you can begin programming the controller, it must display IdLE. To display IdLE from ErrP, press ENTER. If the display shows FAIL instead of IdLE when you touch a key, the thermocouple is either disconnected or burned out.

## Firing Features

### Display Indicator Dots

When time is displayed, a dot in the bottom center of the display will light up. During temperature display, the dot disappears. The center display dot separates hours from minutes. 1 hour and 30 minutes would appear as 01.30, 1 hour and 15 minutes would appear as 01.15, etc.

*You can enter up to 99 hours and 99 minutes, displayed as 99.99. In this example, .99 would appear to be tenths and hundredths of hours, but it is minutes.*

The controller will operate in either °F or °C. When the controller is showing temperature in °C, a display dot on the bottom right of the window will light up. The dot disappears when the controller displays in °F.

### Setting the Alarm from IdLE

The alarm sounds when a preset temperature is reached. Here's how to program the alarm temperature:

**1** From IdLE, touch ENTER then 7. AlAr will display, then the last alarm temperature entered.

**2** Enter the new alarm temperature. Then touch ENTER. IdLE will appear.

When the alarm sounds during a program, shut off by pressing ENTER. The furnace will continue heating if the alarm was set for a lower temperature than the final firing temperature.

### Resetting the Alarm While Firing

After the alarm goes off during a burnout, you can set it to go off again at another temperature. The alarm can be set for either a higher or cooler temperature.

**1** The alarm beeps while program is in progress. Touch 7.

**2** Enter the new temperature.

**3** Touch ENTER. The furnace will continue firing.

*If you touch 7, enter a new temperature, and forget to press ENTER, the controller will stop the firing and the furnace will begin to cool down. You must press ENTER after entering the new alarm temperature.*

### Program Delay

With Program Delay, you can program the furnace now and have it begin heating later.

*WARNING: Never leave your furnace unattended near the end of a firing. We cannot guarantee your furnace against overfiring even though it is automatic. Operator assumes full responsibility for making sure the furnace shuts off at the proper time.*

To enter a delay time from IdLE:

**1** Touch ENTER then 3. Display shows dELA, then the last programmed delay time.

**2** Enter delay time in hours and minutes (e.g. 12 hours and 30 minutes = 1230).

**3** Touch ENTER. IdLE will appear.

### The Controller Operates in °F or °C

The display dot on the lower right corner lights when operating in °C. It disappears when operating in °F. To switch from °F to °C or visa versa from IdLE:

**1** Press ENTER.

**2** Press 0 repeatedly until CHG° appears.

**3** Press ENTER. °F or °C will appear. Press 1 to change selection between °F and °C. Press ENTER.

## Preprogrammed Burnouts

You can fire these factory-installed programs by using the instructions on the front of the controller. You cannot change the parameters in these burnouts; they are stored in "read-only memory." However, you can change them and then enter your new program into Ramp-Hold. (See next page.)

The alarm will sound at 375° F in these burnouts.

5 Hour Burnout			
Segment	Rate	Temp.	Hold Time
1	9999° F.	300° F.	20 Minutes
2	100°	350°	10 Minutes
3	700°	1350°	1.5 Hours
4	450°	900°	99.99 Hours/Mins.

8 Hour Burnout			
Segment	Rate	Temp.	Hold Time
1	9999° F.	300° F.	1 Hour
2	100°	350°	30 Minutes
3	350°	1350°	1.5 Hours
4	300°	900°	99.99 Hours/Mins.

12 Hour Burnout			
Segment	Rate	Temp.	Hold Time
1	9999° F.	300° F.	1 Hour
2	100°	350°	30 Minutes
3	210°	1350°	3 Hours
4	225°	900°	99.99 Hours/Mins.

## A Pre-Programmed Burnout with Multiple Final Temperatures

Suppose you are using the 5 Hour Burnout:

5 Hour Burnout			
Segment	Rate	Temp.	Hold Time
1	9999° F.	300° F.	20 Minutes
2	100°	350°	10 Minutes
3	700°	1350°	1.5 Hours
4	450°	900°	99.99 Hours/Min.

You would like to add another final temperature to the 5 Hour Burnout—for instance, 1200°F. After the furnace reaches 900°F, you want it to soak for two hours, and then heat to 1200°F, and hold again for two hours. You would enter the following in Ramp-Hold firing mode:

5 Hour Burnout with Second Final Temperature			
Segment	Rate	Temp.	Hold Time
1	9999° F.	300° F.	20 Minutes (00.20)
2	100°	350°	10 Minutes (00.10)
3	700°	1350°	1.5 Hours (01.05)
4	450°	900°	2 Hours (02.00)
5	450°	1200°	2 Hours (02.00)

## Ramp-Hold Firing

You can use the Ramp/Hold feature to create your own custom programs. In Ramp-Hold, the controller fires in segments, or stages. Each segment has a firing rate, firing temperature, and hold (or soak) time. Ramp-Hold includes eight segments. Use only the number of segments you need per firing, from one to eight.

Rate is temperature change per hour, in degrees, from 1° to 9999°F. (Example: to raise temperature by 500° per hour, enter a rate of 500). To control cooling, set the segment to a lower temperature than that of the preceding segment.

### Storing User Programs in Ramp-Hold

A “user program” is a set of firing instructions to run the furnace in Ramp-Hold. A user program includes number of segments needed; firing rate, temperature, and hold (if any) for each segment; and an alarm temperature (if any). Ramp-Hold can store up to six user programs even when the furnace is unplugged.

When you enter Ramp-Hold mode (see next column for instructions), the first prompt to appear is **USER**. The **USER** prompt means, “Select a stored user program for this firing.” If you are using Ramp-Hold for the first time, press 1. Then enter number of segments, firing rate, temperature, etc. Each time you add another program to storage, select the next available number, such as 2, at the **USER** prompt.

To use a stored program, select the program number at the **USER** prompt. Press **ENTER**. If there are no changes to the program, press **STOP**. A flashing temperature, then **IdLE**, will appear. The controller is ready to fire the program you selected. (Use Program Review before firing. See next column.)

### Ramp-Hold Programming

As the program prompts you for segments, rate, temperature, etc., you will see values from the last firing. To use these again, just touch **ENTER**. To control cooling, set the segment to a lower temperature than that of the preceding segment.

To fire without a timed Delay: Follow steps 1 through 8. Then press **START** twice.

**1** Apply power to the kiln. **ErrP** will appear. Press **ENTER**. **IdLE** and kiln temperature will appear.

**2** Press **ENTER** then 4. **USER** will appear. Enter a number from 1 to 6 for the stored program desired.

**3** Press **ENTER**. **SEGS** will appear. Enter number of segments needed.

**4** Press **ENTER**. **rA 1** will appear. Enter firing rate for segment 1 (temperature change per hour: from 1° to 9999°).

**5** Press **ENTER**. **°F 1** (or **°C 1**) will appear. Enter the target temperature of segment 1.

**6** Press **ENTER**. **HLd1** will appear. Enter segment 1 hold time in hours/minutes (e.g. 12 hours, 30 minutes = 12.30). No hold = 00.00.

**7** Press **ENTER**. Continue entering values for all segments.

**8** Press **ENTER**. **AlAr** will appear. Enter alarm temperature. (Enter 9999 to turn alarm off.) Then press **ENTER**. **CPL** will appear, then **IdLE**.

**9** To set Delay Fire, press **ENTER** then 3. **dELA** will appear. Enter delay time in hours/minutes (e.g. 12 hours, 30 minutes = 12.30). Then press **ENTER**. (Delay zeroes out after each completed firing.) **CPL** will appear, then **IdLE**.

**10** To start program, press **ENTER** twice. **-On-** will appear, then kiln temperature. If a delay was programmed, **-On-** will appear, then time remaining until start.

To stop the firing, press **STOP**. When program fires to completion, **CPLt** will appear. Press **STOP**. **IdLE** will appear, alternating with cool-down temperature. To shut off the alarm when it sounds during a firing, press **ENTER**.

### Present Status (Where Am I?)

Present Status shows which segment the kiln is in while firing. This is especially useful for programs that have both heating and cooling segments. To use Present Status, press 5 during a firing. The current program segment will display momentarily.

### Skip Segment

Skip Segment works only during firing. To skip a segment, press 9. **SStP** will display. (If you change your mind and don't want to skip that segment, do nothing and the program will continue as it was.) If still want to skip that segment, press **ENTER**. **rA** will appear along with the segment number you just skipped to.

### Program Review Feature

Program Review shows the last program entered. You can enter Program Review from **IdLE** or while the furnace is running. To enter Program Review from **IdLE**, touch **ENTER** then 6. To use Program Review during firing, touch 6. Values for your program will display one after the other.



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