



Watlow-EZ Controller - Ovens
Heating Profile Guide

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INTRODUCTION

PROFILE ELEMENTS

The EZ-Zone oven controller can hold up to 4 heating profiles. A profile is a heating recipe captured in software form to automate multi-step baking or heat treatment applications. Each profile has 10 steps allocated to it, with the steps stored sequentially in the controller memory.

- Profile 1: Steps 1 – 10
- Profile 2: Steps 11 – 20
- Profile 3: Steps 21 – 30
- Profile 4: Steps 31 – 40



Chamber temperature
red (top)

Temperature set point
green (middle)

Display Homepage

Each step is used to initiate 1 of the following options:

Timed Interval (ti)

The Timed Interval includes temperature parameters and time parameters for heating up or allowing the oven to cool down over a set period. This is also known as ramping up or ramping down. The controller calculates and uses a proportional rate of power to heat to temperature within the programmed time interval, starting from the present oven chamber heat state. Always account for the maximum heating rate of the oven when setting this parameter to ramp up or for ambient conditions when setting the oven to cool down.

The maximum programmable time limit for the controller is 99 hours, 55 minutes.

Soak (SoAh)

Sets time parameters for running the oven at a constant temperature. A Soak step always uses the temperature set point of the previous step.

End (End)

Terminates a running profile. Always select the User “USEr” parameter option for End. This setting restores the oven to operator control and returns the oven to its pre-profile heating state.

POWER AND MEMORY

Heating profile steps remain stored when the oven is turned off or experiences a power outage. In the event of a power interruption while running a profile, the oven will restart if the Power switch is in the ON position, but it will not automatically resume the profile. The operator must re-launch an interrupted profile.

INTRODUCTION

EVENT PARAMETERS

Watlow controllers for these ovens include an Event 1 parameter as one of the final parameters for most step types. The pre-programmed Event 1 parameter function varies by oven type.



Event 1 Parameter Set to On

“2” illuminates when oven is calling for heat

“3” illuminates when Event 1 is set to On

Forced Air Ovens – Powering an Attached Exhaust Blower

Some oven models are provided with an external electrical outlet, intended for powering an accessory exhaust blower fan mounted on the oven exhaust vent.

When the Event 1 parameter is set to On, the oven routes power to its external power outlet. When the profile reaches the next step in which Event 1 is set to Off, the oven depowers the outlet.

The Event 1 parameter is set to Off by default. It must be set to On for each profile step in which power will be supplied to an exhaust blower.

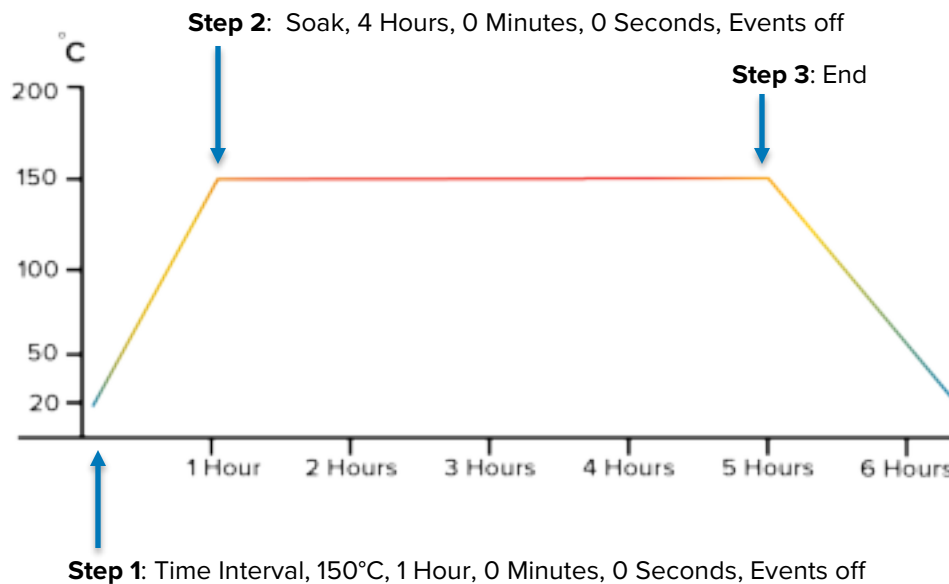
The Event 2 parameter does not have a pre-programmed function.

Note: The exhaust blower will suffer damage if directly exposed for prolonged periods to air 80°C or hotter while turned off. The exhaust vent the blower is mounted on should remain closed until the blower is activated. The vent dampener must be manually opened.

SIMPLE HEATING RECIPE PROFILE EXAMPLE



- **Step 1:** ramps the oven up to 150°C over a 1-hour period
- **Step 2:** soaks at 150°C for 4 hours
- **Step 3:** ends the profile and returns the oven to manual user control



The constant temperature set point on the homepage is set to zero in this example. When the profile reaches its End step, the oven returns to the constant temperature set point. In this case, it will cool to room temperature plus waste heat from the oven.

Continued on next page

PROGRAMMING



Programming the Example Profile

If at any time during the procedure you find yourself on the wrong screen, push the Reset button once to return to the previous menu page.

Access the Profile Page

1. Advance to the Profile (ProF) page, starting from the Home Page



Press and Hold for 5 Seconds



- The display will advance between pages twice. Release the button when the display shows “ProF” in the green middle line.
- **Note:** The P1 indicates that Profile 1 is selected. The Arrow buttons scroll through all 4 profiles on this page. Stay on P1 for this exercise.

Step 1 (Profile 1) 1-hour ramp up to 150°C

1. Access the Profile 1 Step Selection menu



1X



Step 1 (top)

Profile 1 (middle)

2. Advance to the Set Up (S.TYP) options menu for Step 1



1X



Continued next page

PROGRAMMING

3. Scroll to the Timed Interval Option for the Set Up



Push Repeatedly



- Push UP or DOWN arrow repeatedly until the top line shows “ti”
- “ti” indicates the Timed Interval Option is selected.
- **Note:** Timed Intervals are used to ramp up or ramp down the oven temperature over a programmed period.

4. Advance to the Interval Temperature Set Point parameter page



1X



- T.SP1 indicates Temperature Set Point.
- This is the temperature the oven will heat up or passively cool down to during the interval.

5. Adjust the Temperature Set Point to 150°C



Push Repeatedly



- Temperature Set Point set to 150°C.
- **Note:** Pressing and holding an arrow button will cause the temperature to advance in increments of ten (10).

6. Save the Set Point and Advance to the Hours parameter page



1X



- Hours parameter for the Timed Interval.
- **Note:** Pushing the Advance button both saves the new temperature set point and advances to the hour parameter.

7. Set the Hours Parameter



1X



- Set to 1 Hour.
- **Note:** This is the time in hours the oven will spend reaching the 150°C entered above. Account for the maximum heating rate of the oven whenever you set this parameter.

Continued next page

PROGRAMMING

8. Save the Hours parameter setting and Advance to the Minutes parameter page



1X



- Minutes parameter for the Timed Interval.
- **Note:** Pushing the Advance button saves the Hour setting **and** advances to the Minutes parameter

9. Leave the Minutes parameter set to zero and Advance to the Seconds parameter



1X



- Push the Advance button without adjusting the Minutes Parameter.

10. Advance through the Event parameters making no adjustments



2X



- Pushing Advance twice skips through both Event pages, returning to the Set Up parameters option.
- This leaves both Event parameters set to Off.

11. Return to the Profile 1 Step Menu once on the Set Up menu page



1X



- Set Up parameter menu, Timed Interval selected.

Step 1 of Profile 1 Now Saved



- Profile 1 Step Selection menu.

Continued next page

PROGRAMMING

Step 2, 4-hour constant temperature soak at 150°C

1. Scroll to Step 2



1X



- Step 2 of Profile 1 selected.

2. Advance to the Set Up (S.TYP) Options menu for Step 2



1X



3. Scroll to the Soak Option



OR



Push Repeatedly



- Push the Up or Down arrow buttons repeatedly until the top line shows “SoAh”.
- **Note:** This is the heat Soak option used to operate the oven chamber at a constant temperature over a selected period. **The Soak uses the temperature set point from the previous profile step.**

4. Advance to the Soak Hours parameter page



1X



- Hours parameter for the Soak interval.

5. Set the Hours Parameter



- Set to 4 Hours for this exercise.
- **Note:** This is the time in hours the oven will spend soaking at the temperature entered in Step 1.

Continued next page

PROGRAMMING

6. Save the Hours setting and Advance to Set Up menu page



5X



- Pushing the Advance button 5 times saves the Hours setting, then skips through the Minutes, Seconds, and both Event parameters.
- **Note:** This leaves the Minutes and Seconds for Step 2 set to 0 (zero) and the Events set to Off.

7. Return to the Profile 1 Step Selection menu



1X



- Step 2, Profile 1

Step 3, Terminate Profile, Restore User Control

1. Scroll to Step 3



- Step 3 of Profile 1 selected

2. Advance to the Set Up Options menu for Step 3



1X



3. Scroll to End option



OR



Push Repeatedly



- Push the Up or Down arrow buttons repeatedly to scroll to "End".
- **Note:** This option terminates an active profile when the End step is reached.

Continued next page

PROGRAMMING

4. Advance to End option parameter page



1X



- **Note:** Always leave this parameter set to “USER”. User restores control of the oven to the operator when the profile terminates and resumes running at the previous constant temperature set point.

5. Advance through the rest of the End loop parameters



3X



- This returns the display to the Set Up options menu without changing the End or Event parameters.

6. Return to the Profile 1 Step Selection menu



1X



- Step 3, Profile 1.

7. Return to the Homepage



2X



The profile is now ready to launch.

PROGRAMMING

QUICK LAUNCH

Profile 1 (Step 1) can be quick launched on the Home Page using the EZ1 Button.


1. Quick launch Profile 1.

a. Push the EZ1 button.

EZ1

Constant Temp. Set Point shows 0.0 while a profile is active.

"2" illuminates when heating after calculations



Ramping icon illuminates

"EZ1" lamp illuminated.

Profile 1 is now active and will run for its complete duration unless aborted by pushing the EZ1 Button again.

EZ2

Pushing the EZ2 Button on the Home Page launches Profile 2 (step 11). Pushing EZ2 a second time aborts the profile.

End of procedure

PROGRAMMING

PROGRAMMING PROFILES 2 - 4

Accessing Profiles 2 - 4 for programming.

Access the Profiling Page

1. Advance to the Profiling page, starting from the Homepage



Press and Hold for 5 Seconds



- The display will advance between pages twice. Release the button when the display shows “ProF” in the green middle line.
- **Note:** The P1 indicates that Profile 1 is selected. The Arrow buttons scroll through all 4 profiles on this page.

Select a Profile and Access the Profile Step Selection Menu

1. Select the Profile you wish to program



- Profile 2 selected in this example.

2. Access the Profile by advancing once



1X



- First step of Profile 2
- The oven controller holds 40 programmable steps allocated between the 4 profiles.

Profile 1: Steps 1 - 10

Profile 2: Steps 11 - 20

Profile 3: Steps 21 - 30

Profile 4: Steps 31 - 40

3. Advance to the Set Up parameters menu of the First Step



1X



- The profile can now be programmed as per example profile on pages 6 - 11.

PROGRAMMING

LAUNCHING PROFILES

All four (4) profiles may be launched from the **Profile Start Menu**.

Profile 1 can be **quick launched** from the Homepage by pushing the EZ1 button once.



Profile 2 can be quick launched from the Homepage by pushing the EZ2 button once.



1. Advance to the Profile Start menu, starting from the Homepage



Push Repeatedly



- Push Advance repeatedly until “PSt1” appears in the middle display.
- Step 1 of 40 steps selected in this example.

2. Scroll to the Profile Step you wish to launch



- First step of Profile 2 selected in this example.
- Scroll to **Step 1** to launch Profile 1; **Step 11** to launch Profile 2; **Step 21** to launch Profile 3; **Step 31** to launch Profile 4.

3. Advance to the Profile Action Request Page (P.AC1)



1X



- Advancing prepares the controller to launch the previously displayed Step.

4. Change the Action Profile Action parameter to Step “StEP”



1X



- This launches the selected step.

Continued next page

PROGRAMMING

The Profile will launch approximately 3 seconds after the Profile Action parameter Request is changed to Step.



5. Return to the Homepage



1X



- The profile will continue to run until reaching the first step set to End.

COMBINING PROFILES

Profiles may be combined by programming steps sequentially as a single profile.

For example, programming steps 1 – 14 sequentially and choosing the End Option for Step 14 causes Profile 1 to run through all 14 steps when launched. Launching Profile 2 in this programming configuration would only run Steps 11 – 14.

ABORTING A RUNNING PROFILE

The EZ1 Button can be used to abort an active profile.



- Push the button **once** to abort Profile 1 if it was launched using the **EZ1 quick launch function**.



- Push the button **twice** to abort any profiles launched from the Profile Action page.

Note: Pushing the EZ1 Button while running a profile launched from the Profile Action page does the following.

1. It immediately quick launches Profile 1, ending the previous profile.
2. Pushing the button a second time then aborts the newly launched Profile 1.

End of Guide





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