Sample Profile Instructions EZ-ZONE[®] **PM Controller**

Profile Setup

First, consider some foundational profile setup features that once configured, will apply to all configured profiles.

Some of those features that apply to all profiles are listed below with a brief description of their function.

- Ramping Type (Time or Rate) which changes the profile set point based on a set interval of time or set rate.
- **Profile Type** (Set Point or Process) determines whether a step (any step changing the set point) of a profile will begin by using the process value (Process) or the last closed-loop set point (Set Point).
- Guaranteed Soak Enable, when set to 'ON' makes this feature available in all profiles. If Guaranteed Soak Enable is 'ON', use Guaranteed Soak Deviation 1 to 2 to set the value for the corresponding loop. Set the deviation or band above or below the working set point where this condition must be met before the profile can proceed.

Note:

Changes made to profile parameters in the Profiling Pages will be saved and will also have an immediate impact on the running profile. Some parameters in the Profile Status Menu can be changed for the currently running profile, but **should only be changed by knowledgeable personnel and with caution**. Changing parameters via the Profile Status Menu will not change the stored profile but will have an immediate impact on the profile step that is running.

Once these global profile features are configured, the next step will require navigation to the Profiling Page. Here, each desired ramp and soak profile will be configured.

To navigate to the Profile Page from the front panel, follow the steps below:

- 1. From the Home Page, press and hold the Advance Key (a) for approximately five seconds. The profile prompt (Prof) will appear in the lower display and the profile number (e.g. (P)) appears in the upper display.
- 2. Press the Up ② or Down ③ key to change to another profile (P1 to P4).
- 3. Press the Advance Key **()** to move to the selected profile's first step.
- 4. Press the Up ② or Down ③ keys to move through and select the step type.
- 5. Press the Advance Key **(§)** to move through the selected step settings.
- 6. Press the Up **O** or Down **O** keys to change the steps settings.
- 7. Press the Infinity Key ② at any time to return to the step number prompt.
- 8. Press the Infinity Key ② again to return to the profile number prompt.
- 9. From any point press and hold the Infinity Key of for two seconds to return to the Home Page.

Instructions to navigate the profile page appears below.

Pressing and holding the Advance Key for 5 seconds will enter the profile page. for Profile 1 will appear in the red display and for Profile page will appear in the green display.

Pressing either the up or down arrow will change the profile number; (P1, P2, P3 or P4).

Again pressing the Advance Key © causes the controller to enter the selected profile to edit or review each step. The profile number now appears in the green display and the step number appears in the red display.

Programming requires entering each step, programming the attributes of the step and then exiting from the step. Next we increment to the next step, program those attributes of that step and exit. The process is repeated for each step to be programmed.

Pressing and holding the Infinity Key of for 2 seconds returns to the home page when you have completed the profile creation/edits.

Note:

Profile 1 consists of steps 1 through 10.

Profile 2 consists of steps 11 through 20.

Profile 3 consists of steps 21 through 30

Profile 4 consists of steps 31 through 40.

Each profile step is programmed with a **Step Type**. The step type defines what the controller is to do when this step is executed. There are 9 **step types** to choose from when specifying a profile step. These are –

- Unused
- Time or Rate
- Soak
- Wait for Event
- Wait for Process
- Wait for Both
- Wait for Time
- Jump Loop
- End

It is good programming practice to document what you want the profile to do on paper before starting to program the controller. This has several advantages; first it allows us to think through the process, secondly it helps us understand how to program the control and thirdly it documents the profile.

Let's first describe an example of what we want the chamber to do when the profile executes.

- 1) I want to raise the temperature to 440 °F over a 1 hour, 0 minutes and 0 second time period.
- 2) Then I want the chamber to maintain the temperature for 2 hours, 0 minutes and 0 seconds.
- 3) Next the chamber should decrease the temperature as fast as possible to 425 °F.
- 4) Since I do not know how fast the system can cool to 425 °F, I want the controller to wait for 425 °F before soak timing occurs.
- 5) The temperature should be maintained for a 1 hour, 0 minutes, 0 seconds time period.
- 6) After this soak period, the chamber should cool as fast as possible to 32 °F.
- 7) Since I do not know how fast the system can cool to 32 °F, I want the controller to wait for 32 °F before soak timing occurs.
- 8) The chamber will be at 32 °F for 1 hour, 0 minutes and 0 seconds.
- 9) The steps described above should repeat for a total of 15 times
- 10) At which time the controller should end the profile and not control the chamber to any specific temperature. So the chamber will drift to ambient.

Notice how I stated the sequence of events. I said I wanted the chamber to increase to 440 °F in 1 hour, 0 minutes and 0 seconds. I didn't just say 1 hour because the controller is going to ask for hours, minutes and seconds. Also note that you do not tell the controller where to start from.

In step 2 of my profile, I want to maintain temperature for 2 hours, 0 minutes and 0 seconds. That describes a soak step.

We continue the process of describing each step into actions that must occur to accomplish the task.

My controller is set to start from the process value. So when my profile executes it will grab the temperature displayed in red and move towards my target set point of 440° over a 1 hour, 0 minutes and 0 seconds timeframe. I have just described step one of my 1st profile.

The above describes the process in words. Now the profile steps must be defined in terms the controller understands. The next 5 pages show the translated steps documented in a table format. After those pages are shown, the remaining pages document keystroke by keystroke the entry of this sample profile. We suggest you try entering this sample to get familiar with the keys for navigation as well as learning to translate needs into step action. Use the blank programming pages located in a separate file to document your profiles.

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	Step Type Abbrev. USEP SoAh Lule Lule Lule Lule Lule	Step Type circle one Unused Step Soak Wait-for-Event Wait-for-Process Wait-for-Both Jump Loop End	Target SP 1	Target SP 2	Til Hours 0-99	me or Rat Minutes 0-59	Seconds 0-59	Day of	Jump Step	Jump Count	Wait Event 1 oFF/on	Wait Event 2 oFF/on	Wait Process Instance	Proc 1 -1999 to	Type USEr/ HoLd/	oFF/ on	oFF/ on
•	Step Type Abbrev. USEP SoRh Lule Lule Lule Lule Lule Lule Lule	Step Type circle one Unused Step Soak Wait-for-Event Wait-for-Process Wait-for-Both Jump Loop End Wait-for-Time	Target SP 1	Target SP 2	Til Hours 0-99	me or Rat Minutes 0-59	Seconds 0-59	Day of	Jump Step	Jump Count	Wait Event 1 oFF/on	Wait Event 2 oFF/on	Wait Process Instance	Proc 1 -1999 to	Type USEr/ HoLd/	oFF/ on	oFF/ on
•	Step Type Abbrev. USEP SoRh Lule Lule Lule Lule Lule Lule	Step Type circle one Unused Step Soak Wait-for-Event Wait-for-Process Wait-for-Both Jump Loop End	Target SP 1	Target SP 2 -1999 to 9999	Til Hours 0-99	me or Rat Minutes 0-59	Seconds 0-59	Day of	Jump Step	Jump Count	Wait Event 1 oFF/on	Wait Event 2 oFF/on	Wait Process Instance	Proc 1 -1999 to	Type USEr/ HoLd/	oFF/ on	oFF/ on

Cor	mpleted ex	cample for E	Z-ZONE	PM - Pr	ofile 1		Follo	w the r	ow for	step ty	pe and	enter y	our sett	ings in ye	ellow bo	xes	
24	Step Type	Step Type	Target SP 1	Target SP 2	Ti Hours	me or Rat Minutes	e Seconds		Jump Step	Jump Count	Wait Event 1	1	Wait Process Instance	Wait Proc 1	End Type	Event 1	Event 2
Step	Abbrev.	circle one	-1999 to 9999	-1999 to 9999	0-99	0-59	0-59		1-8	0-9999	oFF/on /nonE	oFF/on /nonE	1 or 2	-1999 to 9999	USEr/ HoLd/ oFF	oFF/ on	oFF/ on
	USEP	Unused Step															
	Soft	Soak															
	ししど	Wait-for-Event															
	նվ₽r	Wait-for-Process															
	bubo	Wait-for-Both															
<		Jump Loop	>						1	14						Off	Off
9	End	End															
	[Lo[Wait-for-Time															
	E	Time															
l	rREE	Rate		Rate per	min >>>>												
		ose for this s	nop.	Repeat St	eps 1 to 9,	Tourteen n	nore times	for a tota	al of 15.	Event o	ut 1 and	2 not use	ed.				
		Step Type	Target	Target		me or Rat	e	Day of	Jump		Wait Event	2 not use Wait Event	Wait	Wait	End	Event 1	Event 2
Step	Step Type		Target SP 1	Target SP 2		me or Rat		Day of			Wait Event	Wait Event 2		Proc 1	Type		
Step	Step Type Abbrev.		Target	Target	Ti	me or Rat	e	Day of	Jump	Jump	Wait Event	Wait Event	Wait Process			Event 1	Event 2 oFF/ on
Step		Step Type	Target SP 1	Target SP 2	Til Hours	me or Rat Minutes	e Seconds	Day of	Jump Step	Jump Count	Wait Event 1 oFF/on	Wait Event 2 oFF/on	Wait Process Instance	Proc 1 -1999 to	Type USEr/ HoLd/	oFF/	oFF/
Step	USEP SoRh	Step Type	Target SP 1	Target SP 2	Til Hours	me or Rat Minutes	e Seconds	Day of	Jump Step	Jump Count	Wait Event 1 oFF/on	Wait Event 2 oFF/on	Wait Process Instance	Proc 1 -1999 to	Type USEr/ HoLd/	oFF/	oFF/
Step	USEP SoRh	Step Type circle one Unused Step	Target SP 1	Target SP 2	Til Hours	me or Rat Minutes	e Seconds	Day of	Jump Step	Jump Count	Wait Event 1 oFF/on	Wait Event 2 oFF/on	Wait Process Instance	Proc 1 -1999 to	Type USEr/ HoLd/	oFF/	oFF/
Step	USEP SoRh LuE	Step Type circle one Unused Step Soak Wait-for-Event Wait-for-Process	Target SP 1 -1999 to 9999	Target SP 2	Til Hours	me or Rat Minutes	e Seconds	Day of	Jump Step	Jump Count	Wait Event 1 oFF/on	Wait Event 2 oFF/on	Wait Process Instance	Proc 1 -1999 to	Type USEr/ HoLd/	oFF/	oFF/
Step	USEP SoRh LUE LUPr	Step Type circle one Unused Step Soak Wait-for-Event Wait-for-Process Wait-for-Both	Target SP 1 -1999 to 9999	Target SP 2	Til Hours	me or Rat Minutes	e Seconds	Day of	Jump Step	Jump Count	Wait Event 1 oFF/on	Wait Event 2 oFF/on	Wait Process Instance	Proc 1 -1999 to	Type USEr/ HoLd/	oFF/	oFF/
	USEP SoRh LUE LUPr LUBo	Step Type circle one Unused Step Soak Wait-for-Event Wait-for-Process Wait-for-Both Jump Loop	Target SP 1 -1999 to 9999	Target SP 2	Til Hours	me or Rat Minutes	e Seconds	Day of	Jump Step	Jump Count	Wait Event 1 oFF/on	Wait Event 2 oFF/on	Wait Process Instance	Proc 1 -1999 to	Type USEr/ HoLd/ oFF	oFF/ on	oFF/ on
	USEP SoRh Lule Lule Lule Lule Lule	Step Type circle one Unused Step Soak Wait-for-Event Wait-for-Process Wait-for-Both Jump Loop End	Target SP 1 -1999 to 9999	Target SP 2	Til Hours	me or Rat Minutes	e Seconds	Day of	Jump Step	Jump Count	Wait Event 1 oFF/on	Wait Event 2 oFF/on	Wait Process Instance	Proc 1 -1999 to	Type USEr/ HoLd/	oFF/	oFF/
	USEP SoRh Lule Lule Lule Lule Lule	Step Type circle one Unused Step Soak Wait-for-Event Wait-for-Process Wait-for-Both Jump Loop End Wait-for-Time	Target SP 1 -1999 to 9999	Target SP 2	Til Hours	me or Rat Minutes	e Seconds	Day of	Jump Step	Jump Count	Wait Event 1 oFF/on	Wait Event 2 oFF/on	Wait Process Instance	Proc 1 -1999 to	Type USEr/ HoLd/ oFF	oFF/ on	oFF/ on
	Abbrev. USEP SoRh LUE LUPr Lubo ULC End [LoC	Step Type circle one Unused Step Soak Wait-for-Event Wait-for-Process Wait-for-Both Jump Loop End Wait-for-Time Time	Target SP 1 -1999 to 9999	Target SP 2 -1999 to 9999	Til Hours 0-99	me or Rat Minutes	e Seconds	Day of	Jump Step	Jump Count	Wait Event 1 oFF/on	Wait Event 2 oFF/on	Wait Process Instance	Proc 1 -1999 to	Type USEr/ HoLd/ oFF	oFF/ on	oFF/ on
	Abbrev. USEP SoRh LUE LUPr Lubo ULPr Lubo	Step Type circle one Unused Step Soak Wait-for-Event Wait-for-Process Wait-for-Both Jump Loop End Wait-for-Time	Target SP 1 -1999 to 9999	Target SP 2 -1999 to 9999	Til Hours	me or Rat Minutes	e Seconds	Day of	Jump Step	Jump Count	Wait Event 1 oFF/on	Wait Event 2 oFF/on	Wait Process Instance	Proc 1 -1999 to	Type USEr/ HoLd/ oFF	oFF/ on	oFF/ on

Programming Sample Profile (P1)

Profile 1 - Step 1:

- 1. Press and hold the Advance Key
 to enter the profile page.
 will appear in the red display and
 rightary in the green display. The 1 indicates the first step in profile 1.
- 2. Press the Advance Key

 . Use the up or down arrow keys to display

 . in the red display for Time and

 . Type in the green display.
- 3. Press the Advance Key ③. Use the up or down arrow keys to set the temperature to \(\frac{440}{440}\) in the red display and \(\frac{\color=5P1}{\color=1}\) in the green display for Target Set Point.
- 4. Press the Advance Key

 . Use the up or down arrow keys to display

 in the red display and

 hour of ramp time.
- 5. Press the Advance Key
 . Use the up or down arrow keys to display in the red display and
 . in the green display for 0 minutes of ramp time.
- 6. Press the Advance Key ③. Use the up or down arrow keys to display ______ in the red display and _____ in the green display for 0 seconds of ramp time.
- 7. Press the Advance Key ③. Use the up or down arrow keys to display ______ in the red display and ______ in the green display for Event 1 to be off in this step. Your application is not using the event output functions.
- 8. Press the Advance Key ③. Use the up or down arrow keys to display __oFF in the red display and _EnE2 in the green display for Event 2 to be off in this step. Your application is not using the event output functions.
- 9. Press the Infinity Key . This exits the step just programmed.

Profile 1 - Step 2:

- 1. Press up key to increment to next step number. will appear in the red display and profile 1.
- 2. Press the Advance Key . Use the up or down arrow keys to display 508h in the red display for Soak and 5.590 for Step Type in the green display.

3.	Press the Advance Key . Use the up or down arrow keys to display in the red display and in the green display for 2 hours of soak time.
4.	Press the Advance Key . Use the up or down arrow keys to display in the red display and red in the green display for 0 minutes of soak time.
5.	Press the Advance Key . Use the up or down arrow keys to display in the red display and in the green display for 0 seconds of soak time.
6.	Press the Advance Key . Use the up or down arrow keys to display in the red display and in the green display for Event 1 to be off in this step. This example application is not using the event output functions.
7.	Press the Advance Key . Use the up or down arrow keys to displayoFF in the red display and _EnEC in the green display for Event 2 to be off in this step. This example application is not using the event output functions.
8.	Press the Infinity Key ⊚. This exits the step just programmed.
	rofile 1 - Step 3: Press up key to increment to next step number. will appear in the red display and indicates the third step in profile 1.
2.	Press the Advance Key . Use the up or down arrow keys to display
3.	Press the Advance Key . Use the up or down arrow keys to set the temperature to
4.	Press the Advance Key . Use the up or down arrow keys to display in the red display and in the green display for 0 hours of ramp time.
5.	Press the Advance Key . Use the up or down arrow keys to display in the red display and in the green display for 0 minutes of ramp time.
6.	Press the Advance Key . Use the up or down arrow keys to display in the red display and in the green display for 0 seconds of ramp time.

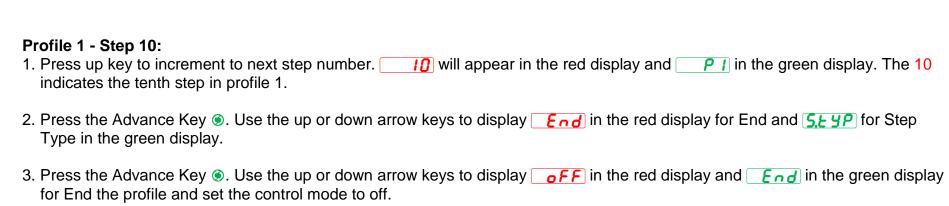
7.	Press the Advance Key . Use the up or down arrow keys to displayoFF in the red display and _Ent i in the green display for Event 1 to be off in this step. This example application is not using the event output functions.
8.	Press the Advance Key . Use the up or down arrow keys to displayoFF in the red display and _EnE2 in the green display for Event 2 to be off in this step. This example application is not using the event output functions.
9.	Press the Infinity Key ☺. This exits the step just programmed.
	rofile 1 - Step 4: Press up key to increment to next step number. We will appear in the red display and PI in the green display. The 4 indicates the fourth step in profile 1.
2.	Press the Advance Key ③. Use the up or down arrow keys to display [Lupr] in the red display for Wait-for-Process and [5,E 4P] for Step Type in the green display.
3.	Press the Advance Key . Use the up or down arrow keys to display in the red display for Instance 1 and . in the green display for Wait for Process Instance which is sensor 1.
4.	Press the Advance Key . Use the up or down arrow keys to display 425 in the red display and 417 in the green display for Wait-for-Process 1. This means to wait on this temperature to be met before proceeding.
5.	Press the Advance Key . Use the up or down arrow keys to displayoFF in the red display and _EnE ! in the green display for Event 1 to be off in this step. This example application is not using the event output functions.
6.	Press the Advance Key . Use the up or down arrow keys to display in the red display and in the green display for Event 2 to be off in this step. This example application is not using the event output functions.
7.	Press the Infinity Key ⊚. This exits the step just programmed.
	rofile 1 - Step 5: Press up key to increment to next step number. S will appear in the red display and P I in the green display. The 5 indicates the fifth step in profile 1.
2.	Press the Advance Key . Use the up or down arrow keys to display . in the red display for Soak and . for Step Type in the green display.

3.	. Press the Advance Key ⑨. Use the up or down arrow keys to display in the red display and hour of soak time.
4.	. Press the Advance Key . Use the up or down arrow keys to display in the red display and in the green display for 0 minutes of soak time.
5.	. Press the Advance Key . Use the up or down arrow keys to display in the red display and in the green display for 0 seconds of soak time.
6.	. Press the Advance Key . Use the up or down arrow keys to display in the red display and in the green display for Event 1 to be off in this step. This example application is not using the event output functions.
7.	. Press the Advance Key ◉. Use the up or down arrow keys to display ☐ FF in the red display and Ent? in the green display for Event 2 to be off in this step. This example application is not using the event output functions.
8.	. Press the Infinity Key ☺. This exits the step just programmed.
	rofile 1 - Step 6: Press up key to increment to next step number. Which is a step of the sixth step in profile 1.
2.	. Press the Advance Key . Use the up or down arrow keys to display . in the red display for Time and . for Step Type in the green display.
3.	. Press the Advance Key . Use the up or down arrow keys to set the temperature to
4.	. Press the Advance Key . Use the up or down arrow keys to display in the red display and hour in the green display for 0 hours of ramp time.
5.	. Press the Advance Key . Use the up or down arrow keys to display in the red display and in the green display for 0 minutes of ramp time.
6.	. Press the Advance Key . Use the up or down arrow keys to display . In the red display and . In the green display for 0 seconds of ramp time.

7.	Press the Advance Key . Use the up or down arrow keys to display in the red display and in the green display for Event 1 to be off in this step. This example application is not using the event output functions.
8.	Press the Advance Key . Use the up or down arrow keys to display in the red display and in the green display for Event 2 to be off in this step. This example application is not using the event output functions.
9.	Press the Infinity Key . This exits the step just programmed.
	Press up key to increment to next step number. will appear in the red display and P i in the green display. The 7 indicates the seventh step in profile 1.
	Press the Advance Key . Use the up or down arrow keys to display . in the red display for Wait-for-Process and . for Step Type in the green display.
3.	Press the Advance Key . Use the up or down arrow keys to display in the red display and . in the green display for Wait for Process Instance 1 which is sensor 1.
4.	Press the Advance Key . Use the up or down arrow keys to display in the red display and in the green display for Wait-for-Process 1. This means to wait on this temperature to be met before proceeding.
5.	Press the Advance Key . Use the up or down arrow keys to display in the red display and in the green display for Event 1 to be off in this step. This example application is not using the event output functions.
	Press the Advance Key . Use the up or down arrow keys to displayoFF in the red display and EnE2 in the green display for Event 2 to be off in this step. This example application is not using the event output functions.
7.	Press the Infinity Key . This exits the step just programmed.
	Press up key to increment to next step number. Will appear in the red display and PI in the green display. The 8 indicates the eighth step in profile 1.
2.	Press the Advance Key . Use the up or down arrow keys to display . in the red display for Soak and . for Step Type in the green display.

3. Press the Advance Key . Use the up or down arrow keys to display in the red display and hour of soak time.	display
4. Press the Advance Key . Use the up or down arrow keys to display . In the red display and . In the green of soak time.	display
5. Press the Advance Key ③. Use the up or down arrow keys to display in the red display and in the green of for 0 seconds of soak time.	display
6. Press the Advance Key ⑤. Use the up or down arrow keys to display ☐ FF in the red display and F I in the green for Event 1 to be off in this step. This example application is not using the event output functions.	display
7. Press the Advance Key ③. Use the up or down arrow keys to displayoFF in the red display and Ent? in the green for Event 2 to be off in this step. This example application is not using the event output functions.	display
8. Press the Infinity Key ☺. This exits the step just programmed.	
Profile 1 - Step 9: 1. Press up key to increment to next step number. Will appear in the red display and P in the green display. The indicates the ninth step in profile 1.	he <mark>9</mark>
2. Press the Advance Key . Use the up or down arrow keys to display . It in the red display for Jump Loop and . Step Type in the green display.	P for
3. Press the Advance Key . Use the up or down arrow keys to display . In the red display for Jump Step value and . If in the red display in the green display.	
4. Press the Advance Key . Use the up or down arrow keys to display . I' in the red display for Jump Count value and . I' in the green display for Jump Count. This means to repeat the previous steps 14 more times.	t
 Press the Advance Key ⑤. Use the up or down arrow keys to display ☐FF in the red display and Ent! in the green for Event 1 to be off in this step. This example application is not using the event output functions. 	display
6. Press the Advance Key . Use the up or down arrow keys to display in the red display and in the green for Event 2 to be off in this step. This example application is not using the event output functions.	display

7. Press the Infinity Key ©. This exits the step just programmed.



- 4. Press the Advance Key

 . Use the up or down arrow keys to display

 oFF in the red display and

 for Event 1 to be off in this step. This example application is not using the event output functions.
- 5. Press the Advance Key

 . Use the up or down arrow keys to display
 . In the red display and
 . In the green display for Event 2 to be off in this step. This example application is not using the event output functions.
- 6. Press the Infinity Key of for two seconds. This exits the profile page.

Starting a Profile from the Home Page

- 1. When at the Home Page, press the Advance Key ⑤ to locate Profile Start and select the file or step number to start. The upper display will show 🗾 and the lower display will show 📝.
- 2. Press the Up ② or Down ③ key to choose the file or step number.
- 3. Press the Advance Key (5) to select the Profile Action Request. The upper display will show [P.R. I].
- 4. Press the Up O or Down V keys to select the Profile Start. The upper display will show Profile and the lower display will show PRII.
- 5. Press the Infinity Key to return Home. The Profile will Start.

Ending a Profile from the Home Page

- 1. Press the Advance Key (5) to select the Profile Action Request. The upper display will show [none] and the lower display will show [P.R [1]].
- 2. Press the Up O or Down V keys to select the End. The upper display will show Fnd and the lower display will show PRE 1
- 3. Press the Infinity Key to return Home. The Profile will End.