7 Chapter 7: Profiling Page



Navigating the Profiling Page

Note:

Some of these menus and parameters may not appear, depending on the controller's options. See model number information in the Appendix for more information. If there is only one instance of a menu, no submenus will appear.

Profile Setup

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

The screen shot below (EZ-ZONE Configurator software) graphically shows the settings (shaded green) 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 that is running.

that will apply to all profiles; e.g., if Guaranteed Soak is not enabled here this feature will not be available in any individual profile configuration.

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

Watlow EZ-ZONE® CONFIGURATOR Edit Device Settings On-Line - Model Number: PM8B2FC-CCFCCAA 000 Click a Menu in the tree to view and edit its settings. Click Finish to save and exit. Parameter Menus Parameters: Setup: Global 1 Parameter Help EZ-ZONE PM elect the Ramping Type Display Units • Setup ...Analog Input AC Line Frequency 60 Hz -Use Ramping Type to have the ramping set Whatog Input
 Linearization
 Process Value
 Digital I/O point change at a set Rate or over a set interval of Time. Ramping Type Rate • Profile Type Process • (022038) + Control Loop Guaranteed Soak Enable Off Guaranteed Soak Deviation 1 Guaranteed Soak Deviation 2 Process + Special Output Function Global Source Instance A Source Instance B Communications
 E- Real Time Clock Power Off Time cations Led Action Both Operations - Factory Zone On • + Profile Channel On Display Pairs Display Time User Settings Save None • • User Settings Restore None Range: Not Applicable > Cancel Help < Back Next > Finish

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 for approximately five seconds. The profile prompt **Prof**

(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 will appear in the lower display and the profile number (e.g. P(I)) appears in the upper display.

- 2. Press the Up **O** or Down **O** key to change to another profile (1 to 4).
- 3. Press the Advance Key
 ^(a) to move to the selected profiles first step.
- 4. Press the Up **○** or Down **○** keys to move through and select the step type.
- 5. Press the Advance Key
 ^(a) 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 👁 at any time to return to the step number prompt.

- 8. Press the Infinity Key 🗢 again to return to the profile number prompt.
- 9. From any point press and hold the Infinity Key 😅 for two seconds to return to the Home Page.

If using EZ-ZONE Configurator software, simply click on the plus sign next to Profiles in the left hand column, as shown in the screen shot below.

Notice in the screen shot to the right some fields or parameters ar not selectable (grayed out) based on the Step Type that is selected.

Starting a Profile

There are several ways to start a profile. Some of the examples that follow requires that certain optional hardware be available on th control. If you are uncertain as to how your control is equipped, compare the part number of your control to the "Ordering Information" page found in the Appendix of this Users Guide.

Ways to start a profile:

- Function Key
- Digital Input
- Profile Request

Configuring the Function Key to Start and Stop a Profile

- 1. Navigate to the Setup Page and then the Function menu. From the Home Page, press and hold the **O** or Down **O** key for approximately six seconds where the upper display will show $\boxed{\mathbf{R}}$ and the lower display will show **SEE**.
- 2. Press the Up **O** or Down **O** key to navigate to the Function **FUn** menu.
- 3. Press the Advance Key ⁽⁶⁾ to enter this menu. The upper display will show [**h**, **g**, **h**] and the lower display will show **LEu**.
- 4. Press the Up **O** or Down **O** keys to select the level that will start the profile (high or low).
- 5. Press the Advance Key
 ^(s) to select the function. In this example, select Profile Start / Stop P.5 E 5
- 6. Press the Advance Key
 ^(*) to select the function instance (Profile to start).
- 7. Return to the Home Page by pressing and holding the Infinity Key 💿 for approximately three seconds.

Note:

The state of the EZ-Function Key (high or low) is maintained with each successive push of the key.

Configuring a Digital Input to Start and Stop a Profile

1. Navigate to the Setup Page and then the Digital I/O menu. From the Home Page, press and hold the \bigcirc or Down \bigcirc key for approximately six econds where

					seconds where
Watlow EZ-ZONE®	CONFIGURATOR				the upper dis-
Edit Device Settings On-Lin	e - Model Number: PM8E	2FC-CCFCCAA			nlay will show
Click a Menu in the tree to view and	edit its settings. Click Finish to se	ave and exit.			
	5				$[\mathbf{R}]$ and
arameter Menus	Parameters: Profile: Profile	1 Step 1		Parameter Help	the lower dis-
EZ-ZONE PM	Stop Type	W. S.C. T.	7	Select What Type this Step Will Be	
 Setup 	Step Type	vvait for 1 ime			play will show
Analog Input	Target Set Point Loop 1	200	F	Use Step Type to select what this step will do.	SEF
Process Value	Target Set Point Loop 2	O F	rocess	after the Step Type setting is changed.	
	Hours	0			9 Pross the I
Control Loop	Minutes	0		 An Unused Step is, in effect, an empty step that can be used to erase a step in the profile 	2.1 less the C
H Output	Seconds	0			🖸 or Down 🖸
	Dete		-	A Time step ramps to a Target Set Point over	1
Special Output Function	Rate		F	Event states for the designated time.	key to naviga
Function Key	Wait for Process Instance	1			to the Digital
Global 1	Wait For Process 1	200 °i	F	A Rate step ramps the process value to the Target Set Doint without exceeding the Pate	to the Digital
Communications	Wait Event 1	Off 🔻	1	while maintaining up to two Event outputs.	I/O menu. U
Real Time Clock	Wait Event 2	Off 🔻	i		non diaplay w
Operations Enstern	Day of Wook		1	A Soak step maintains the last Target Set	per display w
Profile	Day of Week	Sunday	1	designated time.	show d.e
🖶 - Profile 1 Step	Jump Step	1			
Profile 1 Step 1	Jump Count	1		A Wait for Event step will wait for up to two Wait Events to be satisfied while maintaining	and the lower
Profile 1 Step 2	End Type	Off 💌]	up to two Event outputs.	dignlay will a
Profile 1 Step 4	Event 1	Off 🗸	i		uispiay will s
Profile 1 Step 5	Event 2	0#	1	A Wait for Process step will wait for the process value to match the Wait for Process	
Profile 1 Step 6		1011	1	value, while maintaining up to two Event	
Profile 1 Step 7				outputs.	3 Press the A
Profile 1 Step 9				A Wait for Process or Event step will wait for	
Profile 1 Step 10				the process value to match the Wait for	vance Key 🔍
Profile 2 Step				Process value, and wait for any specified Ever	whore the fire
■ Profile 4 Step				input conditions to be satisfied.	where the IIIs
				A Wait for Both step will wait for the process	available digi
				up to two Wait Events to be satisfied while	instance will
				maintaining up to two Event outputs.	instance will
				• A Wait for Time stop will wait for a specified	displayed in t
	Range: Not Applicable			day of the week and time.	1. 1
	Conv. Settings				upper display
	Copy_Settings			- A State step maintains control loops and	
Cancel Help				< Back Next > Finish	4. Press the U
					A or Down

he lower dislay will show SEE. . Press the Up 🕽 or Down 🖸 ey to navigate o the Digital /O menu. Uper display will how **d** . **o** nd the lower isplay will show 562

. Press the Adance Kev 🏼 where the first vailable digital nstance will be isplayed in the pper display.

. Press the Up or Down O key to select the

input of choice.

- 5. Press the Advance Key

 to select the direction (input or output). In this example, select Dry Contact **ICon**.
- 6. Select the level (high or low) that will activate the function by pressing the Advance Key • where the upper display will show [**h**,**g**,**h**] and the lower display will show **LEu**.
- 7. Press the Up **O** or Down **O** keys to select the level that will start the profile (high = closed or low = open).
- 8. Press the Advance Key to select the function. In this example, select Profile Start / Stop [**P.5£5**].
- 9. Press the Advance Key

 to select the function instance (Profile to start).
- 10. Return to the Home Page by pressing and holding the Infinity Key \odot for approximately three seconds.

Starting a Profile from the Operations Page

1. Navigate to the Operations Page and then the Profile Status menu. From the Home Page, press and hold the \bigcirc or Down \bigcirc key for approximately three seconds where the upper display will show $\boxed{R_{I}}$ and the lower display will show $\boxed{\rho R_{F}}$.

- Press the Up O or Down O key to navigate to the Profile Status [P.5 ⊢ R] menu.
- Press the Advance Key

 to enter this menu. The upper display will show

 and the lower display will show
- 4. Press the Up **◊** or Down **◊** keys to select the Profile or Step to start. In this example select 1.
- Press the Advance Key

 to select the Profile Action Request. The upper display will show [nonE] and the lower display will show [P.RE].
- Press the Up O or Down O keys to select the Profile start. The upper display will show ProF and the lower display will show ProF.

Note:

As soon as the Green Advance key is pressed (step 7 below) the designated Profile or Step (as determined in step 4 above) will start.

Press the Advance Key

 to select whether Event 1 will be on or off. The upper display will show

 oFF and the lower display will show

Note:

This setting will temporally override the profile configuration.

- 8. Press the Up **○** or Down **○** keys to select whether Event 1 will be on or off. This will immediately drive the Event to the specified state regardless of the Profile configuration.
- Press the Advance Key

 to select whether Event
 will be on or off. The upper display will show
 □FF and the lower display will show [EnE2].
- 10. Press the Up **○** or Down **○** keys to select whether Event 2 will be on or off. This will immediately drive the Event to the specified state regardless of the Profile configuration.
- 11. Press the Advance Key (a) to see the current Jump Count. The upper display will show (1) and the lower display will show (1).

Profiling Parameters

 PI

 ProF

 Profile (1 to 4)

 PI

 Profile [1 to 4] Step (1 to 40)

 5,E 9P

 Step Type

 E,5PI

 Target Set Point Loop 1

 hour

 FI

 Hours

 FI

 SEE

 Seconds

Ending a Profile from the Operations Page

- Navigate to the Operations Page and then the Profile Status menu. From the Home Page, press and hold the O or Down O key for approximately three seconds where the upper display will show
 R, and the lower display will show *OPEr*.
- Press the Up O or Down O key to navigate to the Profile Status [P.5 ⊢ R] menu.
- 3. Press the Advance Key (a) to enter this menu. The upper display will show [] and the lower display will show [**P.5** <u>E</u> <u>r</u>].
- Press the Advance Key

 to select the Profile Action Request. The upper display will show [nonE] and the lower display will show [P.R[r].
- Press the Up O or Down O keys to select the End. The upper display will show [*End*] and the lower display will show [*P.RLr*].
- 7. Press the Advance Key to end the Profile.
- 8. Return to the Home Page by pressing and holding the Infinity Key ☺ for approximately three seconds.

 $r R \notin E$ $u \notin P$ $u \notin P$ Wait For Process 1 $u \notin E$ $u \notin E$ </tr

Profiling Page

Dis- play	Parameter Name Description	Range	Default	Modbus Relative Ad- dress	CIP Class Instance Attribute hex (dec)	Param- eter ID	Data Type & Read/ Write
P Profiling	P1 ProF Profiling Menu						
P i [P1] to P y [P4]	Profile [1 to 4] Step Select a step to edit or view.	1 to 10 [profile 1] 11 to 20 [profile 2] 21 to 30 [profile 3] 31 to 40 [profile 4]					
[S.typ]	Step Type Select a step type. Note: When configuring the profile type there will be a Time prompt as delivered from the factory (default). If rate is desired navigate to the Setup Page and then the Global Menu where Ramping Type can be changed.	U15EP Unused Step (50) End End (27) Jump Loop (116) Unused Step (50) Unused Step (50) Unused Step (50) U1 Jump Loop (116) U2 Wait For Time (1543) U2 Wait For Both (210) U2 Wait For Both (210) U2 Wait For Process (209) U2 Wait For Event (144) SoAH Soak (87) E , Time (143) FREE Rate (81)	Unused	Instance 1 Map 1 Map 2 2570 4500 Offset to next instance (Map 1 equals +50, Map 2 equals +100)	0x79 (121) 1 to 40 1	21001	uint RWE
[t.SP1]	Step Type Parameters Target Set Point Loop 1 When Step Type is Time or Rate, enter the Closed Loop Set Point for loop 1 to ramp to for this step.	-1,999.000 to 9,999.000°F or units -1,128 to 5,537.000°C	0.0°F or units -18°C	Instance 1 Map 1 Map 2 2572 4502 Offset to next instance (Map 1 equals +50, Map 2 equals +100)	0x79 (121) 1 to 40 2	21002	float RWE
hoUr [hoUr]	Step Type Parameters Hours When Step Type is Time, Soak, or Wait For Time, enter Hours (plus Minutes and Seconds) for this step.	0 to 99	0	Instance 1 Map 1 Map 2 2574 4504 Offset to next instance (Map 1 equals +50, Map 2 equals +100)	0x79 (121) 1 to 40 3	21003	uint RWE
[Min]	Step Type Parameters Minutes When Step Type is Time, Soak, or Wait For Time enter Minutes (plus Hours and Seconds) for this step.	0 to 59	0	Instance 1 Map 1 Map 2 2576 4506 Offset to next instance (Map 1 equals +50, Map 2 equals +100)	0x79 (121) 1 to 40 4	21004	uint RWE
5EC [SEC]	Step Type Parameters Seconds When Step Type is Time, Soak, or Wait For Time enter Seconds (plus Hours and Minutes) for this step.	0 to 59	0	Instance 1 Map 1 Map 2 2578 4508 Offset to next instance (Map 1 equals +50, Map 2 equals +100)	0x79 (121) 1 to 40 5	21005	uint RWE
Note: Some values will be rounded off to fit in the four-character display. Full values can be read with other interfaces.						R: Read W: Write E: EEPROM S: User Set	

Dis- play	Parameter Name Description	Range	Default	Modbus Relative Ad- dress	CIP Class Instance Attribute hex (dec)	Param- eter ID	Data Type & Read/ Write
[rAtE]	Step Type Parameters Rate When Step Type is Rate, enter the rate for ramping in degrees or units per minute.	0 to 9,999.000°F or units per minute 0 to 5,555.000°C per minute	0.0	Instance 1 Map 1 Map 2 2580 4510 Offset to next instance (Map 1 equals +50, Map 2 equals +100)	0x79 (121) 1 to 40 6	21006	float RWE
<u>ь цр і</u> [W.P1]	Step Type Parameters Wait For Process 1 When Step Type is Wait for Process or Wait For Both, enter wait for process value for ana- log input 1 before proceeding in profile.	-1,999.000 to 9,999.000°F or units -1,128.000 to 5,537.000°C	0.0°F or units -18.0°C	Instance 1 Map 1 Map 2 2590 4520 Offset to next instance (Map 1 equals +50, Map 2 equals +100)	0x79 (121) 1 to 40 0xB (11)	21011	float RWE
LJE.1 [WE.1]	Step Type Parameters Wait Event 1 When Step Type is Wait for Event or Wait For Both, select the event state that must be satisfied during this step. Note: Wait Event 1 can be mapped to any available digital input (5 or 6). Navigate to the Setup Page under the Global Menu to find and modify Source Instance A <u>5.18</u> and Source Instance	oFF Off (62) on On (63) nonE None (61)	Off	Instance 1 Map 1 Map 2 2586 4516 Offset to next instance (Map 1 equals +50, Map 2 equals +100)	0x79 (121) 1 to 40 9	21009	uint RWE
[WE.2]	 Step Type Parameters Wait Event 2 When Step Type is Wait for Event or Wait For Both, select the event state that must be satisfied during this step. Note: Wait Event 1 can be mapped to any available digital input (5 or 6). Navigate to the Setup Page under the Global Menu to find and modify Source Instance A 5, 18 and Source Instance B 5, 16. 	off Off (62) on On (63) nonE None (61)	Off	Instance 1 Map 1 Map 2 2588 4518 Offset to next instance (Map 1 equals +50, Map 2 equals +100)	0x79 (121) 1 to 40 0xA (10)	21010	uint RWE
[dow]	Step Type Parameters Day of Week When Step Type is Wait for Time, the profile waits until this setting (Day of Week) along with Hours, Minutes and Sec- onds are met.	Ed Every Day (1567) LJd Week days (1566) Sun Sunday (1565) Image: Constraint of the state of the sta	Sunday	Instance 1 Map 1 Map 2 4580 Offset to next instance Map 2 equals +100)	0x79 (121) 1 to 40 0x29 (41)	21041	uint RWE
Note: Some values will be rounded off to fit in the four-character display. Full values can be read with other interfaces.						R: Read W: Write E: EEPROM S: User Set	

Profiling Page

Dis- play	Parameter Name Description	Range	Default	Modbus Relative Ad- dress	CIP Class Instance Attribute hex (dec)	Param- eter ID	Data Type & Read/ Write
[JS]	Step Type Parameters Jump Step When Step Type is Jump Loop, this setting specifies which step to jump back to. Jump Step must be a lower step number than the current step number.	1 to 40	0	Instance 1 Map 1 Map 2 2592 4522 Offset to next instance (Map 1 equals +50, Map 2 equals +100)	0x79 (121) 1 to 40 0xC (12)	21012	uint RWE
[JC]	Step Type Parameters Jump Count When Step Type is Jump Loop, this specifies the number of jumps to repeat. A value of 0 creates an infinite loop. Loops can be nested four deep.	0 to 9,999	0	Instance 1 Map 1 Map 2 2594 4524 Offset to next instance (Map 1 equals +50, Map 2 equals +100)	0x79 (121) 1 to 40 0xD (13)	21013	uint RWE
[End]	Step Type Parameters End Type When Step Type is End, this setting specifies what the con- troller will do when this profile ends.	 <i>oFF</i> Control Mode set to Off (62) <i>HoLd</i> Hold last closed-loop set point in the profile (47) <i>USEr</i> User, reverts to previous set point (100) 	Off	Instance 1 Map 1 Map 2 2596 4526 Offset to next instance (Map 1 equals +50, Map 2 equals +100)	0x79 (121) 1 to 40 0xE (14)	21014	uint RWE
<u>Ent 1</u> [Ent1]	Step Type Parameters Event 1 When Step Type is not Unused Step, select whether Event Out- put 1 or 2 is on or off during this step.	oFF Off (62) on (63)	Off	Instance 1 Map 1 Map 2 2582 4512 Offset to next instance (Map 1 equals +50, Map 2 Map 2 equals +50, Map 2 equals +100)	0x79 (121) 1 to 40 7	21007	uint RWE
[Ent2]	Step Type Parameters Event 2 When Step Type is not Unused Step, select whether Event Out- put 1 or 2 is on or off during this step.	Off (62)	Off	Instance 1 Map 1 Map 2 2584 4514 Offset to next instance (Map 1 equals +50, Map 2 equals +100)	0x79 (121) 1 to 40 8	21008	uint RWE
Note: Some values will be rounded off to fit in the four-character display. Full values can be read with other interfaces.						R: Read W: Write E: EEPROM S: User Set	

Display	Step Type Description	Parameters in Step Type		
[UStP]	Step Types Unused Step This is an empty step that can be used to plan for future steps to be inserted or temporarily deactivate a step in a profile. Change step type back when the step should be ac- tive again.			
[ti]	Step Types Time If Ramping Type found in the Global Menu of the Setup Page is set for Time, control loop 1 to 2 may be part of the profile and all enabled control loops follow independent set points over the specified time. The state of up to 2 event outputs may be set or maintained.	E 95 1 Target Set Point Loop 1 hollr Hours [??]n Minutes 5E[Seconds [95E] Guaranteed Soak Enable 1 [Ent] Event 1 [Ent2] Event 2		
[rAtE]	Step Types Rate If Ramping Type found in the Global Menu of the Setup Page is set for Rate, control loop 1 must be part of the profile and if control loop 2 is enabled it must follow the same set point and rate in degrees or units per minute. Ensure all control loops have the same units of measure. The state of up to 2 event outputs may be set or maintained.	E 95 1 Target Set Point Loop 1 95 5 1 Guaranteed Soak Enable 1 r R 5 E Rate E n 5 1 Event 1 E n 5 2 Event 2		
[5 0 A H] [SoAk]	Step Types Soak A Soak Step maintains the last Target Set Points for the designated time. The state of up to 2 event outputs may be set or maintained.	holle Hours form Minutes 5Ef Seconds 95E1 Guaranteed Soak Enable 1 Enet 1 Event 1 Enet 2 Event 2		
[CLoC]	Step Types Wait For Time A Wait for Time Step is available with the real-time calen- dar clock feature. This allows the program to wait for a spec- ified day and time before proceeding to the next step. Used to have the profile execute steps everyday or only weekdays. The state of up to 2 event outputs may be set or maintained.	hollr Hours float Minutes 5EC Seconds dobd Day of Week Ent 1 Event 1 Ent 2 Event 2		
[W.E]	Step TypesWait For EventA Wait for Event Step will wait for the two Wait for Event states (1 to 2) to match the specified state. The state of up to 2 event outputs may be set or maintained.	LJE.1 Wait Event 1 LJE.2 Wait Event 2 Ent 1 Event 1 Ent 2 Event 2		
لی بل ۹ ۲ [W.Pr]	Step Types Wait For Process A Wait for Process Step will wait for Process Value 1 or 2 to match the Wait for Process Value. The state of up to 2 event outputs may be set or maintained.	Lup 1 Wait for Process 1 Ent 1 Event 1 Ent 2 Event 2		
[U.bo]	 Step Types Wait For Both A Wait For Process and Event Step will wait for Process Value 1 or 2 to match the Wait for Process 1 value, and/or the two Wait Event states to match the specified state. The state of up to 2 event outputs may be set or maintained.	LJP I Wait for Process 1 LJE I Wait Event 1 LJE Wait Event 2 Ent I Event 1 Ent 2		
[Subr]	Step Types Subroutine A Subroutine Step jumps to a set of subroutine steps that are common to many profiles. This allows efficiency by uti- lizing several steps to be accessed and called upon. Once the subroutine is complete, control is passed back to the main profile at the next step. The state of up to 8 event outputs may be set or maintained. This step type not available in subroutine.	55 Subroutine Step 56 Subroutine Count Ent 1 Event 1 Ent 2 Event 2		

Display	Step Type Description	Parameters in Step Type
 [JL]	Step Types Jump Loop A Jump Loop step will repeat previous steps a number of times designated in Jump Count. Jump Loops can be nested up to four deep. The state of up to 2 event outputs may be set or maintained. This step type not available in subroutine.	JS Jump Step JL Jump Count Ent 1 Event 1 Ent 2 Event 2
	Use the Subroutine step type to jump forward to a set of common steps.	
[End]	 Step Types End An End Step will end the profile and set the control modes and set points to match the End Type. The state of up to 2 event outputs may be set or maintained. The event outputs will not be set off unless specifically stated in this step. If a profile does not have an End Step, the profile continues until step 40, then stops and maintains the last set points and control modes. In Subroutines, the End Step returns control back to the next profile step following the call. 	End Type Ent 1 Ent 2 Event 2