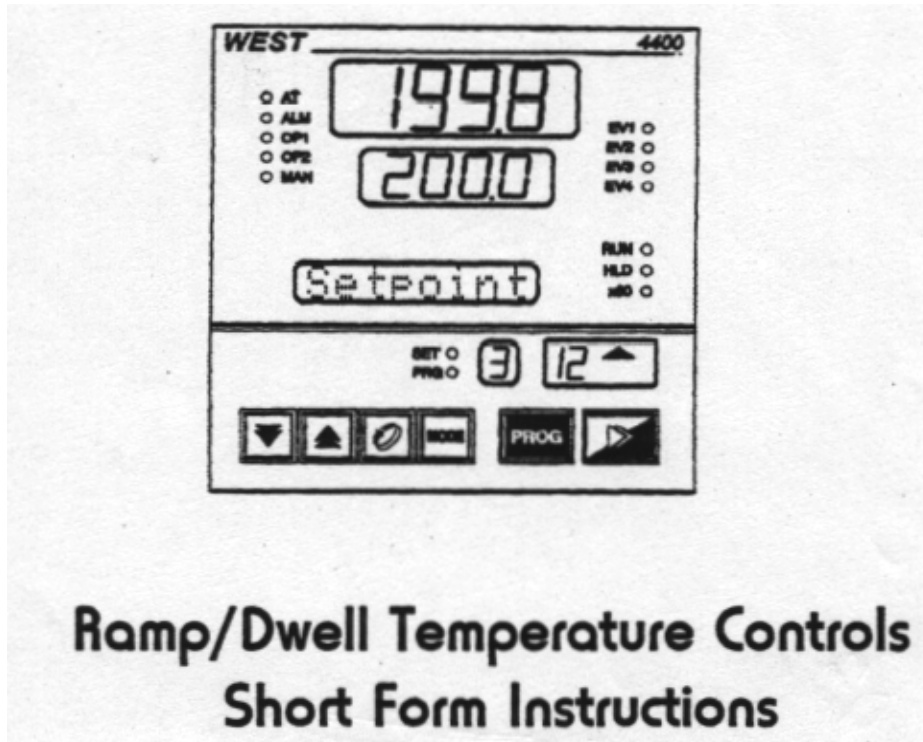


MODEL 4400 TEMPERATURE CONTROL



**Ramp/Dwell Temperature Controls
Short Form Instructions**

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Model 4400 Ramp Dwell Control Short Form Instructions

This document is provided for quick reference in the setting of the various commonly used parameters on the 4400 series controller. It is not meant to cover all possible options or situations. Some knowledge of the 4400 is assumed. The 4400 site and operator manuals are provided for items that are not covered here. Parameter settings and program values in this document are for illustration only and do not relate to a particular application.

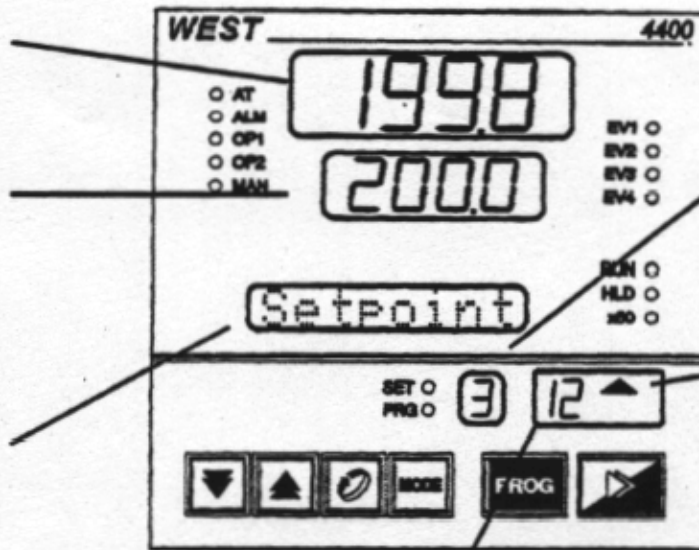
ISE can provide additional application specific assistance. We also have other tools available such as the full instrument manuals, configuration software and full SCADA software that are compatible with this control. Visit our web site at <http://iseinc.com> or contact us for additional assistance.

ISE has been providing quality instrumentation and support since 1946.

Upper Display: Used to display temperature.

Lower Display: Used to display current set-point or the value of a parameter during setup.

Message Display: Used to display current program status while a program is running. It is also used to display the name of the parameter being displayed during setup.



Program Number: Number of currently selected recipe.

Current Ramp State:

▲ = Up Ramp
▼ = Down Ramp

Dwell: Both arrows on.

Segment Number: Number of current segment.

CONTROL STATUS INDICATORS

- AT:** Auto Tune
- ALM:** Indicates status alarm output.
- OP1:** indicates status of output #1.
- OP2:** Indicates status of output #2.
- MAN:** Lit if in manual mode.

EVENT INDICATORS

- EV1-EV4:** Status of event outputs.

RUN STATUS INDICATORS

- RUN:** Program running
- HLD:** Program held.
- X60:** When on: min:seconds.

MODE INDICATORS

- SET:** On when control define mode is entered; Flashes when viewing parameters in controller or programmer define modes.
- PRG:** On when in programmer define mode.



UP/DOWN ARROWS: Raises/Lowers value of displayed parameter.



SCROLL KEY: Displays the next parameter in sequence. Also used to display the program progress in the message display while the program is running.



MODE KEY: Cycles between Normal Display, Controller Mode, & Program Modes. Used during setup or to view parameters when not in setup.



PROGRAM KEY: Selects the desired program (recipe) number.



RUN/HOLD KEY: Pressed once: starts selected program; Pressed while program is running: Holds program at current time & setpoint; If held in for approximately 5 seconds will abort currently running program.

CONTROL PARAMETERS

To enter this mode:

- 1) Press **UP ARROW & SCROW KEYS** at same time. “**Unlock**” will be displayed in message display.
- 2) Use **ARROW KEYS** to display your **Lock Code (ISE Lock Code as shipped is 10)**.
- 3) After setting appropriate **Lock** code press **SCROLL KEY** then **MODE KEY** to get into controller parameter **mode**. Use **SCROLL KEY** to go from parameter to parameter and **ARROW KEYS** to change values for the parameters.

<u>MESSAGE DISPLAY</u>	<u>LOWER DISPLAY</u>	<u>Notes</u>
Filter	2.0	Adjusts Filter time constant
Offset	0	PV offset
Out 1	Read Only	Relative output #1— 0-100 %
Out 2	Read Only	Relative output #2— 0-100 % (optional)
P. Band 1	5.0	Prop. Band for output #1
P. Band 2	5.0	Prop. Band for output #2 (optional)
Reset	5.00	
Rate	1.15	
Overlap	0	(Optional)
Bias	25	Reset Preload
SP High	842	Maximum setpoint for process
SP Low	32	Minimum setpoint for process
Out High	100	
Cycle Time 1	16	Cycle time output #1
DeAlarm1	10	Optional alarms (deviation shown)
AL1 Hyst	1	Difference between ON & Off of alarm#1
Loop Alarm	OFF	
Auto PT	OFF	
A/M Enab	OFF	
Lock	10	Caution: Changing this number will change lock code.

CONTROL SETPOINT WHILE NOT RUNNING PROGRAM

To change setting press **SCROLL KEY** when in ‘normal mode’ (**SET & PRG** lights are out) and use arrow keys to adjust value of the setpoint.

PROGRAM PARAMETERS (General)

To enter this mode:

- 1) Press **UP ARROW** & **SCROW KEYS** at same time. “Unlock” will be displayed in message display.
- 2) Use **ARROW KEYS** to display your **lock code (ISE lock code as shipped is 10)**.
- 3) After setting appropriate lock code press **SCROLL KEY** to get into program parameter mode. Press **PROG Button** until Program number displays “A”. Use **SCROLL KEY** to go from parameter to parameter and **ARROW KEYS** to change values for the parameters.

GENERAL PARAMETERS FOR ALL PROGRAMS

<u>MESSAGE DISPLAY</u>	<u>LOWER DISPLAY</u>	<u>Notes</u>
Start on	SetP or Proc	Defines SP value to use on start of program*
End on	SetP or Proc	Defines SP value to use on end of program*
Delay	0.00	Delays start time of program by time displayed.
LockProg	On or Off	Doesn't allow changes while program is running if on.
Recovery	0 or 1	'0' Aborts program on power outage. "1" continues
Ext. Sel	nonE	Allows external selection of program,run, etc. (option)

* Start on or End on: SetP starts program from the Setpoint value (SP that is used when not running a program). Proc starts the program from the current process variable (temperature).

GENERAL PARAMETERS FOR SELECTED PROGRAM

Change program number to the desired program number by pressing **PROG**. Segment number should be blank.

<u>MESSAGE DISPLAY</u>	<u>LOWER DISPLAY</u>	<u>Notes</u>
Cycles	1	How many times to run program
AutoHold	OFF, H_SP, L_Sp or both	Hold program if PV is above, below or both by hold band
HoldBand	{ doesnt show if Auto hold is off}	Band for auto hold in degrees
Hold on	{ doesnt show if Auto hold is off}	Hold on dwells, ramps or both
Pre-x60	Off	Determines if program is MMSS or HHMM Min/Sec or Hrs/Min

PROGRAM PARAMETERS (Profile)

To enter this mode:

- 1) Press **PROG** button until Program number displays the desired program number.
- 2) Press **UP ARROW & SCROLL KEYS** at same time. “Unlock” will be displayed in message display.
- 3) Use **ARROW KEYS** to display your **lock code (ISE lock code as shipped is 10)**.
- 4) After setting appropriate lock code press **SCROLL KEY**. Use **SCROLL KEY** to go from parameter to parameter and **ARROW KEYS** to change values for the parameters.

RAMP/DWELL Sample Program

<u>SEG#</u>	<u>MSG DISP.</u>	<u>LOWER DISP.</u>	<u>NOTES</u>
1	Final SP	400	Ramp to 400
1	Time	1.15	Ramp to 400 in 1 Hour, 15 minutes
1	Event	0101	Turn on optional event #1 & #3
2	FinalSP	—	Dwell at 400
2	Time	1.20	Dwell for 1 hour 20 minutes
2	Event	0010	Turn off event #1 & 3; turn on #2
3	Final SP	600	Ramp to 600
3	Time	3.00	Ramp from 400 to 600 in 3 hours
3	Event	1000	Turn off event 2; Turn on event #4
4	FinalSP	800	Ramp to 800
4	Time	0.10	Ramp SP to 800 in 10 minutes
4	Event	0000	Turn off all events
5	Final SP	—	Dwell Setpoint at 800
5	Time	2.00	Dwelltime=2 Hours at 800
5	Event	0001	Turn on Event #1 (all others off)
6	FinalSP	—	Dwell at 800
6	Time	6.00	Dwell at 800 for and additional 6 Hrs
6	Event	0000	turn off events
7	Final SP	End	End of program

NOTES ON CHANGING PARAMETERS

- 1) To create a **Dwell** (—) press **RAISE & LOWER BUTTONS** at same time.
- 2) To create an **END** segment go to “Time” in segment and use **DOWN ARROW** (past 0.00) until “End” is displayed in lower display.
- 3) To create a **“Join”** to another program: go to “Time” in segment and use **DOWN ARROW** (past 0.00) until “J0x” is displayed lower display (where x is the number of the program you went to run at the completion of the program)
- 4) The event display is a series of 1’s and 0’s signifying that an event is On or Off respectfully. Evt4, Evt3, Evt2, Evt1 is the order on the display. For example :0100 signifies that Event #3 is energized, all others are off.

GENERAL INSTRUCTIONS

TO RUN A PROGRAM

1. Apply power to control.
2. Select desired recipe number with **PROG BUTTON**.
3. Press **RUN/HOLD BUTTON**.

To Select Manual Control

Press “**Scroll**” & “**Mode**” keys at same time. (This mode is normally disabled in the control setup)

To Activate Self Tune

Make sure no programs are running. Press the **Scroll** key until the message screen shows “**SelfTune**”. Press the **Mode** & the **Up Arrow** keys at the same time to cycle between on & off for self tune.

To Activate Pre Tune

Make sure no programs are running. Press the **Scroll** key until the message screen shows “**Pre Tune**”. Press the **Mode** & the **Up Arrow** keys at the same time to cycle between on & off for pre tune.

WHILE THE PROGRAM IS RUNNING

1. Program number of the currently running program is displayed.
2. Segment number of the current segment is displayed.
3. Arrow(s) are lit to indicate whether Setpoint is ramping up, ramping down or dwelling at a constant temperature.
4. **OP1** light illuminates when output #1 is activated.
5. **OP2** light (optional) illuminates when output #2 is activated
6. **EV1-EV4** light illuminates showing status of optional event relays.
7. Upper display shows temperature (PV).
8. Lower display shows current setpoint.
9. Message display is blank or by pressing **SCROLL** button displays time remaining in current segment. Also displays messages to alert the operator of occurrences such as if the program is aborted by someone or due to power outage.
10. **RUN** light is illuminated indicating the program is running.
11. **HLD** light is illuminated if program is being held.
12. Control & Program parameters may be viewed by pressing **MODE** button and using **SCROLL** key to step through the parameters. Normal setup does not allow the operator to change program parameters while the program is running.

TO HOLD A PROGRAM

Holding a program stops the time from advancing. It holds the setpoint at the current value.
To hold the program press and release the **RUN/HOLD** button. **HLD** light will illuminate.

To continue with program press and release **RUN/HOLD** button again. **HLD** light will go out.

TO ABORT A PROGRAM

Aborting a program stops the program permanently. The setpoint reverts to the programmed setpoint value for when a program is not running.

To Abort the program press and hold the **RUN/HOLD** button until Aborted is displayed in message display. Program can only be restarted from the beginning.

Parameter List

Parameter Name	Your Value	ISE Default	Units	
Control Setpoint While Not Running a Program (page 5)				
Setpoint *			Degrees	
Control Parameters (page 5)				
Filter			2 Seconds	
Offset			0 Degrees	
Out1		Read Only	%	
Out2		Read Only	%	
P.Band1		5.0%		
P.Band2		5.0%		Optional
Reset		5.00	Min.Sec	
Rate		1.15	Min.Sec	
Diff1		0.1%		
Overlap		0%		
Bias		25%		
Diff1		0.1%		
Diff2		0.1%		Optional
SP High		Scale Max	Degrees	
SP Low		Scale Min	Degrees	
Out High		100%		
Cycle Time1		16	Seconds	
Cycle Time2		16	Seconds	Optional
Alm1 Value			Degrees	Optional
Alm2 Value			Degrees	Optional
Auto PT Enab		OFF		
A/M Enable		OFF		
Program Number				
Program Parameters (General- Program A) Page 6				
Start on		SetP		
End on		SetP		
Delay		0.00	Hrs.Mins	
Lock Prog		On		
Recovery		0		
Ext Sel		nonE		Optional
General Parameters Selected Program Page 6				
Cycles		0		
Auto Hold		OFF		
Hold Band		10		
Hold On			d=Dwell r= Ramp	
Pre X60		OFF		

Program Parameters (Profile) page 7			
Final Setpoint 1			Degrees
Time Rate 1			Hrs.Min
Event Outputs 1			Binary Value
Final Setpoint 2			Degrees
Time Rate 2			Hrs.Min
Event Outputs 2			Binary Value
Final Setpoint 3			Degrees
Time Rate 3			Hrs.Min
Event Outputs 3			Binary Value
Final Setpoint 4			Degrees
Time Rate 4			Hrs.Min
Event Outputs 4			Binary Value
Final Setpoint 5			Degrees
Time Rate 5			Hrs.Min
Event Outputs 5			Binary Value
Final Setpoint 6			Degrees
Time Rate 6			Hrs.Min
Event Outputs 6			Binary Value
Final Setpoint 7			Degrees
Time Rate 7			Hrs.Min
Event Outputs 7			Binary Value
Final Setpoint 8			Degrees
Time Rate 8			Hrs.Min
Event Outputs 8			Binary Value
Final Setpoint 9			Degrees
Time Rate 9			Hrs.Min
Event Outputs 9			Binary Value
Final Setpoint 10			Degrees
Time Rate 10			Hrs.Min
Event Outputs 10			Binary Value
Final Setpoint 11			Degrees
Time Rate 11			Hrs.Min
Event Outputs 11			Binary Value
Final Setpoint 12			Degrees
Time Rate 12			Hrs.Min
Event Outputs 12			Binary Value
Final Setpoint 13			Degrees
Time Rate 13			Hrs.Min
Event Outputs 13			Binary Value
Final Setpoint 14			Degrees
Time Rate 14			Hrs.Min
Event Outputs 14			Binary Value
Final Setpoint 15			Degrees
Time Rate 15			Hrs.Min
Event Outputs 15			Binary Value
Final Setpoint 16			Degrees
Time Rate 16			Hrs.Min
Event Outputs 16			Binary Value