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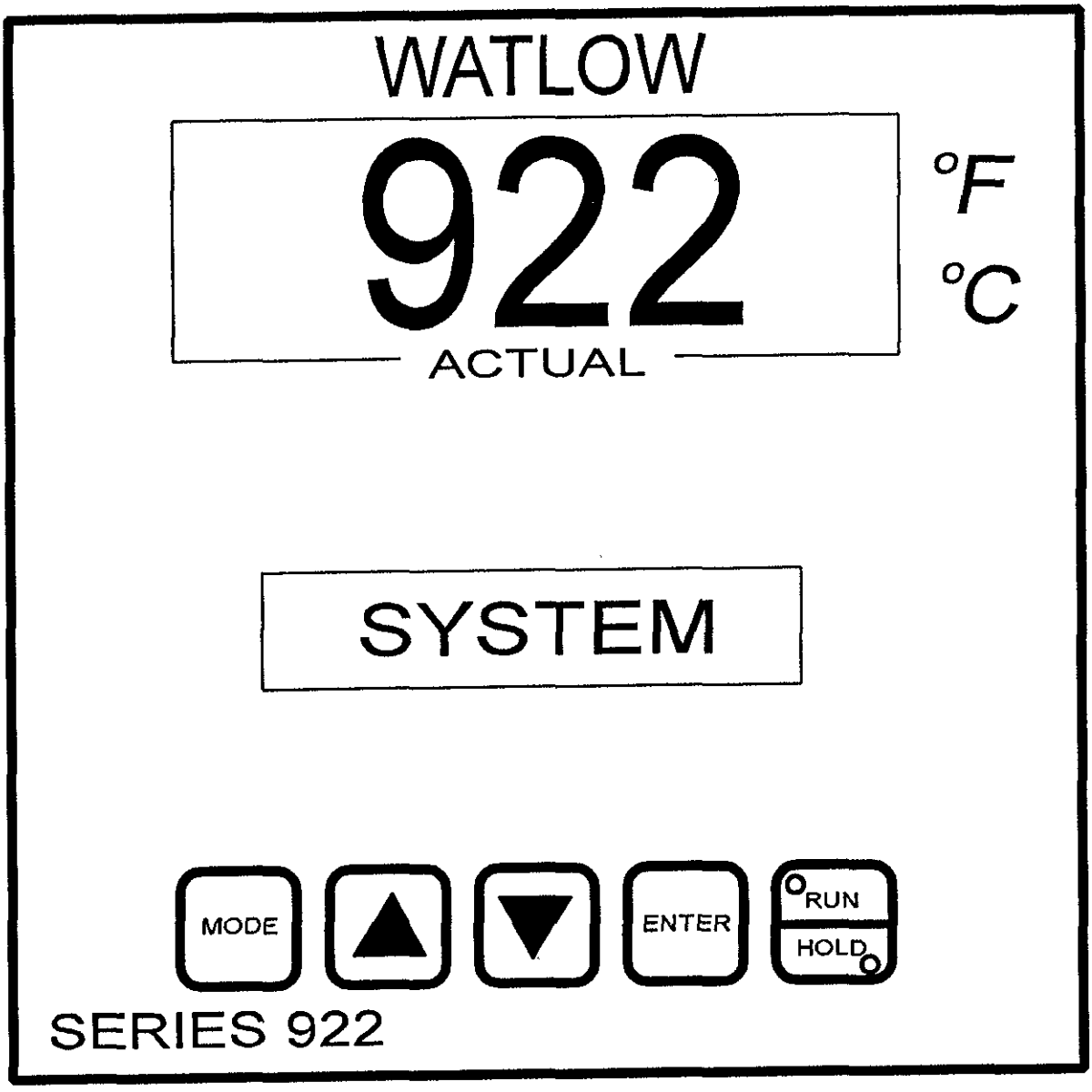
Instruction Manual for the Despatch/Watlow 922 Control



Notice

Users of this equipment must comply with operating procedures and training of operation personnel as required by the Occupational Safety and Health Act (OSHA) of 1970, Section 6 and relevant safety standards, as well as other safety rules and regulations of state and local governments. Refer to the relevant safety standards in OSHA and National Fire Protection Association (NFPA), section 86 of 1990.

Caution

Setup and maintenance of the equipment should be performed by qualified personnel who are experienced in handling all facets of this type of system. Improper setup and operation of this equipment could cause an explosion that may result in equipment damage, personal injury or possible death.

Dear Customer,

Thank you for choosing Despatch Industries. We appreciate the opportunity to work with you and to meet your heat processing needs. We believe that you have selected the finest equipment available in the heat processing industry.

At Despatch, our service does not end after the purchase and delivery of our equipment. For this reason we have created the Service Products Division within Despatch. The Service Products Division features our Response Center for customer service. The Response Center will direct and track your service call to ensure satisfaction.

Whenever you need service or replacement parts, contact the Response Center at 1-800-473-7373: FAX 612-781-5353.

Thank you for choosing Despatch.

Sincerely,

Despatch Industries

PREFACE

The INTRODUCTION section provides an overview of the control.

The THEORY OF OPERATION section details the function and operation of the control.

The INSTRUCTIONS section provides details on unpacking, installing, operating and maintaining the control.

The APPENDIX section contains Special Instructions for operating the control instrument and a Troubleshooting Table.

An efficient way to learn about the control would be to read the manual while working with the control. This will give you practical hands-on experience with information in the manual and the control.

While reading this manual, if a term or section of information is not fully understood, look up that item in the appropriate section. Then go back and reread that section. Information skipped, not understood or misunderstood could create the possibility of operating the equipment in an unsafe manner. This could cause damage to the oven or personnel or reduce the efficiency of the equipment.

NOTE:
Read the entire INTRODUCTION and THEORY OF OPERATION before installing the oven.

WARNING:
Failure to heed warnings in this instruction manual and on the oven could result in death, personal injury or property damage.

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INTRODUCTION

The Watlow manual has sample programs written for an imaginary unit and default parameter values that are different from those entered by Despatch. Do not use the Watlow sample program on this equipment.

NOTE:
Your control has already been configured at Despatch. Use this manual as a guide to typical settings.

This INTRODUCTION section provides an overview of the Watlow controller.

The microprocessor based single loop controller is capable of measuring, displaying and controlling temperature, flow and level from a variety of inputs.

The controller is easy to use. Control functions, alarm settings and other parameters are easily entered through the front keypad. All user's data can be protected from unauthorized changes with its SETUP mode security system. Battery back-up protects against data loss during AC power outages.

CAUTION:
Before making changes to your controller consult with Despatch Industries Service Products at 1-800-473-7373.

Parameter values have been entered at the factory. Do not change the Despatch parameter values until you determine by test that they need updating. Make a permanent copy of the Despatch tune and program configuration parameters before any changes are made.

Do not cold start your control as suggested in the Watlow manual. This will delete factory installed parameter values and the Despatch sample program.

In this application the controller has been factory configured to control temperature and humidity conditions in your Despatch chamber. Under normal conditions, you should not have to re-program this controller. We have, however, included re-programming instructions in this manual to help guide you through that process if it should become necessary.

INSTRUCTIONS

Functional Description

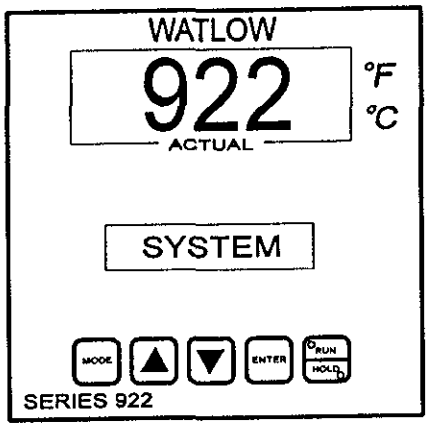

Figure 1 illustrates the Watlow 922 control.

Table 1 Display and Key Description

Display or Key	Description
ACTUAL Display	Shows the actual value of the process variable for Channel 1 in four digits.
°F LED	Indicates the value in the **ACTUAL** display is temperature in °F. When both °C and °F LEDs are OFF, the 922 is displaying Process Variable Units (PVUs).
°C LED	Indicates the value in the **ACTUAL** display is temperature in °C.
Alphanumeric Display	Shows entry prompts, the parameter values in alphanumerics and Channel 2 ACTUAL value.
MODE Key	This key steps the Series 922 in sequence from prompt to prompt.
▼ Key	Decreases the value in the alphanumeric display. A light touch decreases the value by one digit. Hold the key down to decrease the value at a rapid rate.
RUN/HOLD Key	Executes or holds a program from any Main menu.
▲ Key	Increases the value in the alphanumeric display. A light touch increases the value by one digit. Hold the key down to increase the value at a rapid rate.
90° Front Panel Screw	Secures the control chassis in its case with a ¼ turn clockwise or releases the chassis with a ¼ turn counter-clockwise.
ENTER Key	Enters selected (flashing) data into the microprocessor memory. This will clear an error code, or latched alarm indications when the **ACTUAL** display value returns to within the alarm limit.
Run/Hold LEDs	When the **HOLD** LED is ON steady, the 922 is in a **HOLD** condition. When the **HOLD** LED flashes, the unit is in a WAITFOR step or has exceeded the guaranteed soak deviation. When the **RUN** LED is ON the 922 is in the **RUN** condition. When the **RUN** LED is flashing, the program is being held by the remote hold input.

Operating Controller in System Mode

1. Turn the power on. The controller will show on the lower display **Program, Setup** or **System,** depending on how the unit was turned off.
2. Press **Mode** key until **System** is displayed.
3. To set the temperature, press the **Enter** key until **SP1** is shown in the alpha-numeric display.
4. Use the ▲ key or the ▼ keys to set the desired temperature.
5. Press **ENTER** to activate the new setpoint.
6. To set the %RH, press the **MODE** key until **SP2** is shown in the alpha-numeric display.
7. Use the ▲ key or the ▼ keys to set the desired %RH.
8. Press **ENTER** to activate the new setpoint.
9. Press the **MODE** key to display the actual %RH (or **C2**) in the lower display. The upper display will continue to show the actual temperature so you can monitor both.

NOTE:
The special instructions for the setup mode can be found in the Appendix of this manual.

NOTE:
Remember, when running humidity there is an event that needs to be programmed **on** to activate the humidity system.

Follow these instructions if you need to turn on an event relay (ie. event 1 which actuates the humidity system on temp/humidity equipment).

1. Press the **MODE** key until **E1** is displayed.
2. Use the ▲ key or the ▼ key until either the desired off or on message is displayed.
3. Press **ENTER** to make the new event relay status take place.
4. Press the **Mode** key until **Return** is displayed. Pressing the **Enter** key will leave the system mode and **System** will be displayed.

NOTE:
To leave any mode in the controller, press the **Mode** key until **Return** is displayed. Press the **Enter** key and one of the three modes will be displayed (program, setup or system).

Entering Data in the Program Mode

The program mode is used to create a profile/file.

The Series 922 is capable of storing 10 profiles up to a maximum total of 99 steps.

1. Press the **Run/Hold** key to place the controller in the hold mode.

2. Press the **Mode** key until **Program** is displayed.

3. Press the **Enter** key.

4. The display will show **File?** and a number such as 1 through 10.

5. Press the ▲ key or the ▼ key to change the number to the profile/file you wish to change. Press enter once you have the number assigned.

6. **Step 1** will be displayed. Press the **Enter** key and one of the following step types will be displayed.

   - Setpoint
   - Jump Loop
   - Wait For
   - Autostart
   - Stop
   - Link

   If you want more details on step types, refer to the Watlow manual. The sample program below shows how to use the typical step types.

Sample Program

The sample program demonstrates the function of the unit. It is pre-programmed in the factory and available for you to run upon installation of your chamber. The sample program ramps from ambient to 40°C/95% over a 30 minute period, holds 40/95 for 30 minutes, then ramps to 25°C/95% over another 30 minute period. This is held for 30 minutes. The chamber is then ramped as quickly as possible to -10°C and held for 30 minutes. The process is repeated using a jump step. Finally, the chamber is returned to ambient and ends.

Sample Step Chart

Chart 1 - Master Step Chart Sample Program Make photocopies, keep original clean.

Step 1	✓	Step Type	Values			Time	Events ON or OFF EV1	EV2	EV3	EV4	EV5	EV6	EV7	EV8
	✓	Setpoint	SP1 25	SP2 95		HR:MN:SEC 0:10:00	On							
		Jumploop	JS	JC										
		Waitfor	WE	W1	W2	WHR:WMN								
		Autostart				DAY:HR:MN								
		Stop												
		Link	To File?											

25° and 95% are held for 10 minutes to allow humidity system to fill. Event 2 is humidity.

Step 2	✓	Step Type	Values			Time	Events ON or OFF EV1	EV2	EV3	EV4	EV5	EV6	EV7	EV8
	✓	Setpoint	SP1 40	SP2 95		HR:MN:SEC 0:30:00	On							
		Jumploop	JS	JC										
		Waitfor	WE	W1	W2	WHR:WMN								
		Autostart				DAY:HR:MN								
		Stop												
		Link	To File?											

Ramp to 40°/95% over 30 minute period.

Step 3	✓	Step Type	Values			Time	Events ON or OFF EV1	EV2	EV3	EV4	EV5	EV6	EV7	EV8
	✓	Setpoint	SP1 40	SP2 95		HR:MN:SEC 0:30:00	On							
		Jumploop	JS	JC										
		Waitfor	WE	W1	W2	WHR:WMN								
		Autostart				DAY:HR:MN								
		Stop												
		Link	To File?											

Hold 40°/95% for 30 minutes.

Step 4	✓	Step Type	Values			Time	Events ON or OFF EV1	EV2	EV3	EV4	EV5	EV6	EV7	EV8
	✓	Setpoint	SP1 25	SP2 95		HR:MN:SEC 0:30:00	On							
		Jumploop	JS	JC										
		Waitfor	WE	W1	W2	WHR:WMN								
		Autostart				DAY:HR:MN								
		Stop												
		Link	To File?											

Ramp back to 25°/95% over 30 minute period.

Sample Step Chart (Cont.)

Step 5	✓	Step Type	Values			Time	Events ON or OFF							
							EV1	EV2	EV3	EV4	EV5	EV6	EV7	EV8
	✓	Setpoint	SP1 -10	SP2		HR:MN:SEC 0:00:01	Off							
		Jumploop	JS	JC										
		Waitfor	WE	W1	W2	WHR:WMN								
		Autostart				DAY:HR:MN								
		Stop												
		Link	To File?											

Step ramp (1 second) to -10°. Humidity event is off to protect refrigeration.

Step 6	✓	Step Type	Values			Time	Events ON or OFF							
							EV1	EV2	EV3	EV4	EV5	EV6	EV7	EV8
		Setpoint	SP1	SP2		HR:MN:SEC								
		Jumploop	JS	JC										
	✓	Waitfor	WE	W1 -3	W2	WHR:WMN								
		Autostart				DAY:HR:MN								
		Stop												
		Link	To File?											

Wait to get within 2° of setpoint.

Step 7	✓	Step Type	Values			Time	Events ON or OFF							
							EV1	EV2	EV3	EV4	EV5	EV6	EV7	EV8
	✓	Setpoint	SP1 -10	SP2		HR:MN:SEC 0:30:00	Off							
		Jumploop	JS	JC										
		Waitfor	WE	W1	W2	WHR:WMN								
		Autostart				DAY:HR:MN								
		Stop												
		Link	To File?											

Hold for ½ hour.

Step 8	✓	Step Type	Values			Time	Events ON or OFF							
							EV1	EV2	EV3	EV4	EV5	EV6	EV7	EV8
		Setpoint	SP1	SP2		HR:MN:SEC								
	✓	Jumploop	JS 01	JC 01										
		Waitfor	WE	W1	W2	WHR:WMN								
		Autostart				DAY:HR:MN								
		Stop												
		Link	To File?											

Jump back to step 1 to repeat process (1) time.

Step 9	✓	Step Type	Values			Time	Events ON or OFF							
							EV1	EV2	EV3	EV4	EV5	EV6	EV7	EV8
	✓	Setpoint	SP1 75	SP2 60		HR:MN:SEC 0:10:00	Off							
		Jumploop	JS	JC										
		Waitfor	WE	W1	W2	WHR:WMN								
		Autostart				DAY:HR:MN								
		Stop												
		Link	To File?											

Bring unit back to normal conditions before shutting down.

Step 10	✓	Step Type	Values			Time	Events ON or OFF							
							EV1	EV2	EV3	EV4	EV5	EV6	EV7	EV8
		Setpoint	SP1	SP2		HR:MN:SEC								
		Jumploop	JS	JC										
		Waitfor	WE	W1	W2	WHR:WMN								
		Autostart				DAY:HR:MN								
	✓	Stop												
		Link	To File?											

Stop

Master Step Chart

Step #	✓	Step Type	Values			Time	Events ON or OFF							
							EV1	EV2	EV3	EV4	EV5	EV6	EV7	EV8
		Setpoint	SP1	SP2		HR:MN:SEC								
		Jumploop	JS	JC										
		Waitfor	WE	W1	W2	WHR:WMN								
		Autostart				DAY:HR:MN								
		Stop												
		Link	To File?											

Step #	✓	Step Type	Values			Time	Events ON or OFF							
							EV1	EV2	EV3	EV4	EV5	EV6	EV7	EV8
		Setpoint	SP1	SP2		HR:MN:SEC								
		Jumploop	JS	JC										
		Waitfor	WE	W1	W2	WHR:WMN								
		Autostart				DAY:HR:MN								
		Stop												
		Link	To File?											

Step #	✓	Step Type	Values			Time	Events ON and OFF							
							EV1	EV2	EV3	EV4	EV5	EV6	EV7	EV8
		Setpoint	SP1	SP2		HR:MN:SEC								
		Jumploop	JS	JC		WHR:WMN								
		Waitfor	WE	W1	W2	DAY:HR:MN								
		Autostart												
		Stop												
		Link	To File?											

Step #	✓	Step Type	Values			Time	Events ON and OFF							
							EV1	EV2	EV3	EV4	EV5	EV6	EV7	EV8
		Setpoint	SP1	SP2										
		Jumploop	JS	JC										
		Waitfor	WE	W1	W2									
		Autostart												
		Stop												
		Link	To File?											

Step #	✓	Step Type	Values			Time	Events ON or OFF							
							EV1	EV2	EV3	EV4	EV5	EV6	EV7	EV8
		Setpoint	SP1	SP		HR:MN:SEC								
		Jumploop	JS	JC		WHR:WMN								
		Waitfor	WE	W1	W2	DAY:HR:MN								
		Autostart												
		Stop												
		Link	To File?											

Step #	✓	Step Type	Values			Time	Events ON or OFF							
							EV1	EV2	EV3	EV4	EV5	EV6	EV7	EV8
		Setpoint	SP1	SP2		HR:MN:SEC								
		Jumploop	JS	JC										
		Waitfor	WE	W1	W2	WHR:WMN								
		Autostart				DAY:HR:MN								
		Stop												
		Link	To File?											

Operating Controller as a Setpoint Profiler

The following sections describe how to start or stop a profile. You can try this with the factory installed Despatch sample program. There is also a brief introduction to entering a profile.

For details on how to use the W922 as a setpoint profiler, refer to the Watlow manual enclosed. Chapter 3 explains a sample program. Chapter 6 explains some of the details of programming.

Remember, do not cold start your control. You will lose the factory installed set-up variables and the tuning variables. These are specifically for your unit and are not the same as the Watlow default settings.

Also remember that the sample program in the Watlow manual may not work on your chamber. The following pages do contain a Despatch sample program that will work on your chamber.

How to Start a Profile/File

1. Return to SYSTEM using the **Enter** key at the **Return** prompt. Press the **Run/Hold** key.

2. The controller asks what **File?** to run. Use the ▲ key or the ▼ key to select the file to be executed.

3. Press the **Enter** key.

4. Press the **Mode** key. The controller will display **START?**

5. Press the ▲ key or the ▼ key to select the beginning step.

6. Press the **Enter** key.

The controller quickly shows the step type and indicates the starting step. The **Run** LED is lit. Upon completion of the profile/file, **SYSTEM** is displayed.

You may step through the parameters to see what the step type is and what the parameters are set at by using the **Mode** key. The Time Remaining is also displayed at the end of the menu. Once the Time Remaining reaches 00:00:00, it shows what step the profile has progressed to.

How to Stop or Abort a Profile/File

Press the **Run/Hold** key to place the controller in the hold mode. System will be displayed and you are back to the main menu.

How to Resume a Profile/File

7. Press the **Run/Hold** key to place the controller in the hold mode. **File**? will be displayed

8. Press the **Mode** key until **START** is displayed.

9. Press the **Mode** key. **Resume?** will be displayed.

10. Press the **Enter** key.

APPENDIX

Troubleshooting

For your convenience, we have included a troubleshooting section in this manual. This section covers problems which may occur in the Despatch applications of the controller. The Watlow manual has more detailed information.

Error Codes/Alarms

Refer to the Watlow manual for definition of code.

Clearing an Error Code

1. Correct the problem.
2. Return to the SYSTEM menu.
3. Use the ▲ key and the ▼ key to reach the **ER1** or **ER2** parameter.
4. Press **Enter**.
5. Press **Enter** or transmit a 0.

If the code returns, or if the Watlow control replies to a data communicated **? ER1** or **? ER2** query with the same code, the problem still exists. Refer to the Watlow manual.

ER1 error codes can only be cleared when in the SYSTEM prompt and **ER1** XX is flashing. **ER2** error codes can be cleared by returning to the SYSTEM menu, or by pressing the **Enter** key while in the RUN mode.

How to Clear an Alarm Code

An alarm code will alternately flash with the parameter that you are presently on. If the LAT alarm value is NLAT, your alarms are non-latching and will clear automatically when the **ACTUAL** display value returns to within the normal operating band. If LAT = LAT, the alarms are latching, and must be cleared. Alarm conditions can be cleared by pressing the **Enter** key, while in the **Run** mode, or in the **CLR ALARM** mode.

Warm/Cold Start

A warm start will save all programmed information in the memory. A cold start is a clean startup condition. All memory is deleted and the controller will return to default settings.

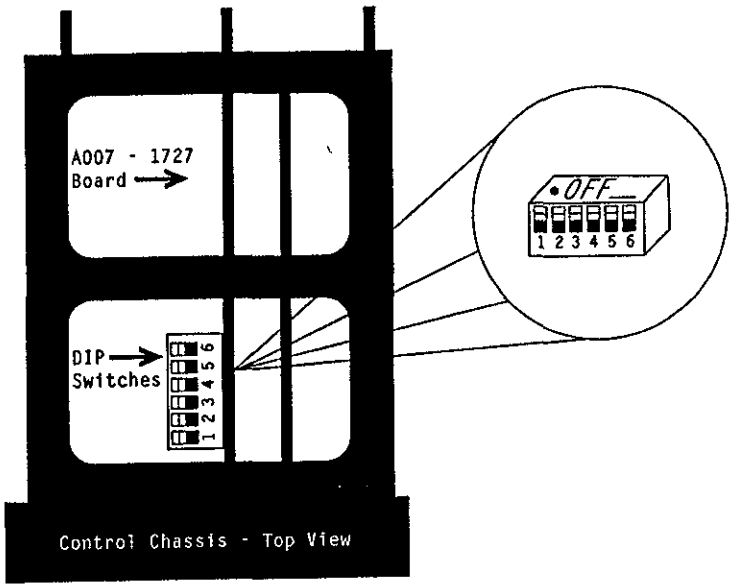

Figure 2 DIP Switch Location and Orientation

Warm/Cold Start (Cont.)

Table 2 DIP Switch Selection.

DIP Switch No.	Function ON	Function OFF	Normal Operating Position	Description
1	Cold Start	Warm Start	OFF	Determines a warm or cold start. Your controller leaves the factory programmed for a warm start.
2	Display the factory selected SPCLFUNC parameters	Display all SPCLFUNC parameters	Choose	Selects whether all SPCLFUNC parameters will be displayed or not.
3	Tenths of units displayed	No decimal displayed	Choose	Determines whether the decimal point will be displayed in tenths of units for 0-5V or 4-20mA input.
4	0-5VDC/0-20mA input	1-5VDC/4-20mA input	Choose	Selects 0-5VDC/0-20mA input or 1-5VDC/4-20mA input selection.
5	Not Used	Not Used	OFF	
6	Factory Test/Calibrate	Normal Operation	OFF	Factory test/calibrate switch.

Changing the Position of a Switch

Whenever you change the position of a DIP switch, follow this procedure:

1. Remove power from the Watlow Control. Turn the front panel screw 90° counterclockwise.

2. Grip the front panel bezel and pull it straight out from the control case. The control chassis will come out of the case as you pull the bezel.

3. Set the DIP switch to the position you want.

4. Return the control chassis to the case. Be sure you have it oriented correctly. It will not fit in upside down, but check just the same. Press firmly, but gently, to seat the chassis.

Special Instructions for the Setup Mode

The Watlow control has been tested and preset at the factory for normal operating conditions. In most applications, it will not be necessary to alter the oven's settings. This section contains additional information and reference material to access the Setup mode.

The setup mode is used to reconfigure the controller.

1. Press the **Run/Hold** key to place the controller in the hold mode.

2. Press the **Mode** key until **Setup** is displayed.

3. Press the **Enter** key.

4. The display will show **Access** and a number such as 0 through 5.

5. Press the ▲ key or the ▼ key to change the number to the access required. The following is a list of access modes:

    0 Calibration Mode
    1 PID/Tuning Mode
    3 Diagnostics Mode
    5 Special Functions

If you want more details on display codes and settings, refer to the Watlow manual. The following tables show typical codes for the access modes.

Special Instructions for the Setup Mode (Cont.)

Make photocopies, keep the original clean.

Table 3 PID Tuning Mode for Channel 1

Prompt	Description ACCESS = (1) PID To enter PID parameters use ACCESS (1) and press ENTER	Range	Default	Despatch Settings	Your Settings
CH1 PB1H	Enter the Channel 1 Proportional Band value, Heating.	0 to 900°F 0 to 500°C 0 to 500 Units	45°F 25°C 25U	9	
RS1H	Enter the Channel 1 Rest value, Heating. Not displayed if PH1H = 0.	0.00 to 5.00 repeats/minute	0.00	0.10	
RT1H	Enter the Channel 1 Rate value, Heating. Not displayed if PH1H = 0.	0.00 to 5.00 repeats/minute	0.00	0.01	
CT1H	Enter the Channel 1 Cycle Time value, Heating. Not displayed if PB1H = 0. Dependent on output & OUT1.	1 to 60 seconds	5	1	
RB1H	Enter the Channel 1 Rate Band value, Heating. Not displayed if PB1H = 0. 0 denotes rate is always functional.	0 - 70 times PB1H	0	1	
DB1	Enter the Current Dead Band value for Channel 1.	-36 to 36°F -20 to 20°C -20 to 20 Units	0	0	
PB1C	Enter the Channel 1 Proportional Band value, Cooling.	0 to 900°F 0 to 500°C 0 to 500 Units	45°F 25°C 25U	9	
RS1C	Enter the Channel 1 Reset value, Cooling. Not displayed if PH1C = 0.	0.00 to 5.00 repeats/minute	0.00	0.10	
RT1C	Enter the Channel 1 Rate value, Cooling. Not displayed if PH1C = 0.	0.00 - 5.00 repeats/minute	0.00	0.01	
CT1C	Enter the Channel 1 Cycle Time value, Cooling. Not displayed if PB1C = 0. Dependent on output and OUT1.	1 - 60 seconds	5	5	
RB1C	Enter the Channel 1 Rate Band value, Cooling. Not displayed if PB1C = 0. 0 denotes rate is always functional.	0 - 70 times PB1C	0	1	
RETURN	Press the ENTER key to return to the SYSTEM prompt. Press the MODE key to return to the PID prompt.				

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Special Instructions for the Setup Mode (Cont.)

Table 4 PID Tuning Mode for Channel 2

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Prompt	Description ACCESS = (1) PID To enter PID parameters use ACCESS (1) and press ENTER.	Range	Default	Despatch Settings	Your Settings
CH2 PB2H	Enter the Channel 2 Proportional Band value, Heating. Dependent on TYP parameter.	0 to 900°F 0 to 500°C 0 to 500 Units	45°F 25°C 25U	20	
RS2H	Enter the Channel 2 Reset value, Heating. Not displayed if PH2H = 0. Dependent on TYP parameter.	0.00 to 5.00 repeats/minute	0.00	0.15	
RT2H	Enter the Channel 2 Rate value, Heating. Not displayed if PH2H = 0. Dependent on TYP parameter.	0.00 to 5.00 repeats/minute	0.00	0.60	
CT2H	Enter the Channel 2 Cycle Time value, Heating. Not displayed if PB2H = 0. Dependent on output TYP and OUT2.	1 to 60 seconds	5	1	
RB2H	Enter the Channel 2 Rate Band value, Heating. Not displayed if PB2H = 0. Dependent on TYP parameter. 0 denotes rate is always functional.	0 - 70 times PB2H	0	3	
DB2	Enter the Current Dead Band value for Channel 2. Dependent on TYP parameter.	-36 to 36°F -20 to 20°C -20 to 20 Units	0	-1	
PB2C	Enter the Channel 2 Proportional Band value, Cooling. Dependent on TYP parameter.	0 to 900°F 0 to 500°` 0 to 500 Units	45°F 25°C 25U	45	
RS2C	Enter the Channel 2 Reset value, Cooling. Not displayed if PH2C = 0. Dependent on TYP parameter.	0.00 to 5.00 repeats/minute	0.00	0.15	
RT2C	Enter the Channel 2 Rate value, Cooling. Not displayed if PH2C = 0. Dependent on TYP parameter.	0.00 to 5.00 repeats/minute	0.00	0.60	
CT2C	Enter the Channel 2 Cycle Time value, Cooling. Not displayed if PB2C = 0. Dependent on output TYP & OUT2.	1 to 60 seconds	5	5	
RB2C	Enter the Channel 2 Rate Band value, Cooling. Not displayed if PB2C = 0. Dependent on TYP parameter. 0 denotes rate is always functional.	0 to 70 times PB2C	0	3	
RETURN	Press the RETURN key to return to the SYSTEM prompt. Press the MODE key to return to the PID prompt.				

Special Instructions for the Setup Mode (Cont.)

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Table 5 Diagnostics Mode

Prompt	Description ACCESS = (3) DIAG To enter PID parameters use ACCESS (1) and press ENTER	Range	Default	Your Settings
MAN1	Enter % power output for Channel 1.	-100 TO 100%		
MAN2	Enter % power output for Channel 2. Dependent on TYP parameter.	-100 to 100%		
C2	Displays Channel 2 ACTUAL temperature.	R2L to R2H		
RETURN	Press the ENTER key to return to the SYSTEM prompt. Press the MODE key to return to the DIAGNOS prompt.			

Positive % refers to the heat output, and Negative % refers to the cool output. Changing these parameter values will default other parameters and clear all files.

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Special Instructions for the Setup Mode (Cont.)

Make photocopies, keep the originals clean.

Table 6 Special Function Mode

Prompt	Description ACCESS = (5) SPCLFUNC To enter PID parameters use ACCESS (1) and press ENTER		Range	Default	Despatch Settings	Your Setting
C/F/U	Enter the unit of measure code. (Celsius, Fahrenheit /Units) Not displayed if DIP Switch #2 is ON.		C/F/U	F	C	
TYP	Enter actual process display to be shown. Temperature /Process/Humidity. Not if DIP Switch #2 is ON.	Dual T/C Dual RTD Dual RTD 0.1 0.1 RTD, Process T/C, Process RTD, Process Dual Process	T/T, T T/T, T/H, T T/T, T/H, T T/P, T T/P, T T/P, T P/P, P	T/T T/T T/T T/P T/P T/P P/P	TH	
OUT1	Enter the control output for Channel 2, Outputs 1 and 2. Not displayed if DIP Switch #2 is ON.	Heat PID/Cool PID Cool PID/Heat PID	HTCL CLHT	HTCL	HTCL	
OUT2	Enter the control output for Channel 1, Outputs 3 and 4. Not displayed if DIP Switch #2 is ON. Dependent on TYP.	Heat PID/Cool PID Cool PID/Heat PID	HTCL CLHT	HTCL	CLHT	
R1L	Enter the Range Low value for Channel 1. Not displayed if DIP Switch #2 is ON.		Dependent on input selection. See your TYP parameter setting.		-73	
R1H					177	
R2L	Enter the Range Low value for Channel 2. Not displayed if DIP Switch #2 is ON. Dependent on TYP.				0	
R2H					100	
AUX1	Enter the Auxiliary Output 1. Not displayed if DIP Switch #2 is ON. Dependent on event board.	AUX1 AL AUX1 EV	Alarm output Event output	AL	EV	
AUX2	Enter the Auxiliary Output 2. Not displayed if DIP Switch #2 is ON. Dependent on TYP & event board.	AUX2 AL AUX2 EV				
RTD	Enter input gain of RTD input channels for different curves. Not displayed if DIP Switch #2 is ON. Dependent on input.		JIS or DIN	JIS	DIN	
ALT	Set altitude in feet for humidity mode. Not displayed if DIP Switch #2 is ON. Dependent on input.		0, 2500, 5000	0	0	
GS	Enter the Guaranteed Soak.		0 to 50°C	0	0	
ANLG	Enter parameter the Analog retransmit signal represents.		C1, C2, SP1, SP2	C1	C2	
SCALE	Enter millivolts to scale analog retransmit output.		1, 2, 5, 10	1	1	
COM	Select between XON/XOFF or ANSI X3.28 protocol. Dependent on communications capability.		XON or STX	STX	-	
BAUD	Select baud rate for serial communications to run at. Dependent on communications capability.		1200, 2400	1200	-	
COM ID	Enter the communications protocol identification. Dependent on communications capability and COM = STX.		0 to 9	0	-	
LOCK	Enter the Front panel Lock code.		0 to 2	0	0	
CLR FILE	Press ENTER to display FILE? Enter a file number to clear.		1 to 10	1	1	
RETURN	Press the ENTER key to return to the SYSTEM prompt. Press the MODE key to return to the SPCLFUNC prompt.					

Special Instructions for the Setup Mode (Cont.)

Make photocopies, keep the original clean.

Table 7 Calibration Mode

Prompt	Description ACCESS = (0) CALIB To enter CALIB parameters use ACCESS (0) and ENTER	Range	Default	Your Settings
T1 XX:XX	Read only. Displays the Real Time. HH:MM			
HOUR	Enter the hours to display the system time-of-day clock.	0 - 23 hours	0	
MIN	Enter the minutes to display the system time-of-day clock.	0 - 59 minutes	0	
CAL1	Enter the Calibration Offset value for Channel 1.	-90 to 90°F -50 to 50°C -9.0 to 9.0°F -5.0 to 5.0°C/U	0	
CAL2	Enter the Calibration Offset value for Channel 2. Dependent on TYP parameter.	-90 to 90°F -50 to 50°C -9.0 to 9.0°F -5.0 to 5.0°C/U	0	
A1H	Enter the Alarm 1 High value. Displayed if AUX1 = AL. Dependent on AUX1 and ALTYP1 parameters.	See below.		
A1L	Enter the Alarm 1 Low value. Displayed if AUX1 = AL. Dependent on AUX1 and ALTYP1 parameters.	See below.		
A2H	Enter the Alarm 2 High value. Displayed if AUX2 = AL. Dependent on AUX2, ALTYP2 and TYP parameters.	See below.		
A2L	Enter the Alarm 2 Low value. Displayed if AUX2 = AL. Dependent on AUX2, ALTYP2 and TYP parameters.	See below.		
RETURN	Press the ENTER key to return to the SYSTEM prompt. Press the MODE key to return to the CALIB prompt.			