P/N 122648B
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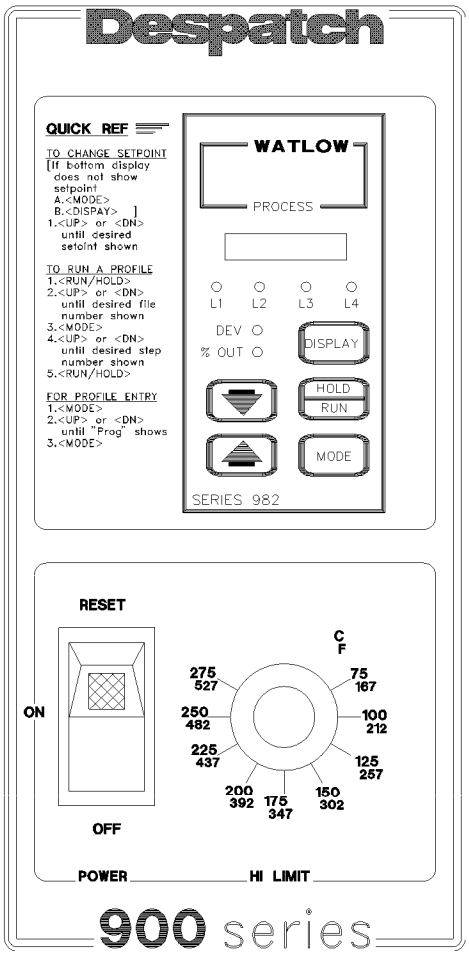
C-144

DESPATCH 900 SERIES CHAMBER
WATLOW 982 CONTROL



INSTRUCTION MANUAL

Prepared by:
Despatch Industries
P.O. Box 1320
Minneapolis, MN 55440-1320
Customer Service 800-473-7373

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.

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

Despatch Industries
Advantage Service Assurance Program (ASAP)

PLEASE CONTACT: Despatch Service Agreements Specialist at 800-473-7373

Despatch continues to deliver exceptional products backed by a strong sense of responsibility and drive for long term customer satisfaction. Your partnership with Despatch can offer even higher value through your subscription to one of Despatch's Advantage Service Assurance Program (ASAP).

Warranty

Despatch's exclusive, comprehensive service programs start with the 1 year parts only warranty which is described on the other side of this document. This warranty can be expanded immediately to meet your most stringent service needs. Despatch Service Products Group will be able to answer your service questions and provide a quotation for the immediate expansion of your product warranty. Call 800-473-7373.

Immediate Service Response

The key to an effective service program is response. Wherever your location, Despatch is only a phone call away. Our U.S. and Canadian customers can reach Despatch at 1-800-473-7373. Worldwide customers can call 1-612-781-5356 or FAX 1-612-781-5485. Our Customer Service Technicians have over 150 years combined experience and access to detailed design and manufacturing documentation specific to your Despatch unit(s). This exacting level of service is a benefit only Despatch can provide and means that you can expect speedy, accurate and the most cost effective response.

Field Service Network

A worldwide network of factory trained Service Professionals is available to support your Despatch equipment. From routine repair to certified instrument calibration, the Despatch service network is positioned to respond to your needs. As a manufacturer of custom equipment, our service programs are customized to meet your specific needs regarding:

1. Service scope
2. Response time
3. Preventive maintenance frequency and content
4. Payment method

Sustained Service Support

At Despatch, long term customer satisfaction means more than just responding quickly and effectively to our customers' service needs. It means offering comprehensive customer support well beyond the scope and duration of our initial warranty. Despatch offers two basic service packages which are customized to each individual customer's need. These service packages are titled Full Service and Preventive Maintenance Plus+ service agreement products. Each is unique in the industry and offer the following benefits:

1. Priority response for minimum production interruption
2. Preventive maintenance for longer product life
3. Discounts on parts and services
4. Various payment plans to ease budgeting and recording expenses
5. Reduce purchase ordering costs

→PLEASE CONTACT: DESPATCH SERVICE AGREEMENTS SPECIALIST, 800-473-7373

This Despatch 900 Series Chamber Manual covers the 920 and the 930 series chambers which are supplied with a Despatch/Watlow 982 profiler/controller.

The INSTRUCTIONS provide directions on operating the chamber.

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

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

The APPENDIX has information on troubleshooting, error codes/alarms, warm/cold start and special instructions for re- programming the control.

Your equipment should come with (2) manuals. The manual you are now reading is for your specific chamber and includes all details as built and set up by Despatch. You should also have a manual by Watlow which is just for the control.

A second Despatch 900 Series Environmental Chamber Equipment Manual covers equipment installation, safety precautions, maintenance, and troubleshooting. After you have used the equipment manual to familiarize yourself with the safety procedures, refer to this manual for instructions on the control and operation of the chamber.

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

Refer to the manufacturer's Watlow 982 manual for quick reference or deeper detail on running Watlow 982.

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INSTRUCTIONS

The Watlow 982 installed on the 900 Series Chamber has been factory configured.

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.

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

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

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 it's SETUP mode security system. Battery back-up protects against data loss during AC power outages.

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.

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

In this application the controller has been factory configured to control temperature conditions in your Despatch chamber. Under normal conditions, you should not have to re-program this controller.

Installation

For first time installation follow the sections of the equipment manual which address unpacking and inspection, installation and pre-start-up. Be especially certain that the correct voltage is applied for the configuration you have.

It is possible to add event relays that disable the cooling solenoid, or shut down all control circuits. For instructions on installing these auxiliary event relays contact Despatch Industries.

Operating

Before proceeding with the operation instructions, read the warnings and safety precautions in the Despatch 900 Series Environmental Bench Chamber Equipment Manual. Failure to heed all precautions can result in death, injury or property damage.

Typical Start-Up

For first time installation, follow the instructions in the 900 Series Bench Chamber equipment manual which addresses unpacking and inspection, installation and pre-start-up.

1. Press the POWER switch to the RESET position. This will activate the fan motor and control circuit. The POWER switch will automatically return to the ON position.

   The control instrument will begin heating or cooling to reach the temperature setpoint shown in the lower display.

2. Set the HI-LIMIT to the desired temperature which will ensure protection of your test load. Do not set the limit more than 10E C over the maximum rating of the chamber. See the nameplate just above the control panel for maximum temperature rating.

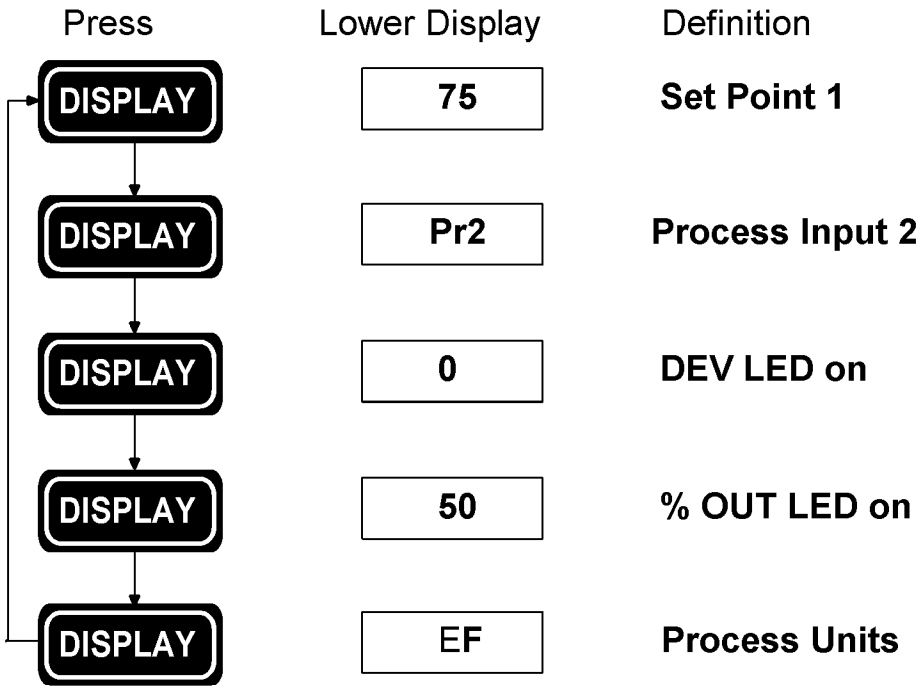
   Should a controller malfunction occur and the test chamber reach the HI-LIMIT setpoint, the HI-LIMIT will automatically cut off power to heater(s) and fan motors.

3. Verify proper function of the HI-LIMIT by adjusting its setpoint lower than the chamber temperature. Power should be cut off to heater(s) and fan motor(s). A HI-LIMIT trip or power outage requires manual reset by placing the POWER switch to the RESET position.

4. Use the key and the key to enter a setpoint as described in **Using W982 as a Setpoint Controller** below, or run a programmed profile as described in **Using W982 as a Setpoint Profiler**.

5. If desired, enter the temperature profile you wish to run if it is not already entered. Refer to the following section on operation of the Watlow 982 for details on programming.

Operating Controller in Manual Mode



The W982 is easily used to control a constant setpoint.

1. Power up the controller. The W982 controls a constant setpoint. When the instrument first lights up, the lower display shows the current setpoint (a numeric value) and is in the display loop mode.

   (If the lower display is not numeric or does not respond to the or keys, then press the MODE key followed by the DISPLAY key.)

2. Press the key or key until the desired temperature setpoint is shown. The new setpoint will take effect after a few seconds.

Follow these instructions to turn events on and off while in the display mode.

1. Press the MODE key until the event appears in the lower display (ex. **Ent3**)

2. Use the key and the key to turn it off or on.

3. Press the DISPLAY key to return to the manual mode.

4. Press the DISPLAY key repeatedly to view the display loop.

Operation Menus

1. Press the MODE key to advance to the OPEr prompt.

There are three menus under OPEr.

- System (SyS)
- PID (PID)
- Program (PROg)

2. Press the key or the key to switch between menu options.

3. Press the MODE key to enter menu and cycle through various settings.

4. Press the DISPLAY key to exit.

Using W982 as a Setpoint Profiler

To use your Watlow 982 as a setpoint profiler, first create your profile. Chapter 7 of the Watlow supplied manual explains how to enter your own profile. In addition, Despatch has entered a sample profile for your own use in self-training.

Remember, do not cold start your control. You will lose the set- up variables entered by the Despatch factory and the tuning variables which are good general values. The set-up and tuning variables entered at the Despatch factory 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 is for an imaginary piece of equipment and may not work on your chamber.

How to Start a W982 Profile

To run the entered profile (or your own):

1. First press the HOLD/RUN key. The lower display shows FiLE.

2. Use the or arrows to find the file you wish to begin profile with. Options are 1 to 4. Press MODE when the desired file is shown.

3. The lower display now indicates StEP. Press the or arrow key until the desired starting step is shown.

4. Press the HOLD/RUN key again when the desired step number is shown. The RUN LED will stay on without blinking.

How to Stop a Profile

1. Press the HOLD/RUN key to place the controller in the hold mode.

2. The RUN LED will turn off.

To resume the halted profile:

1. Press the HOLD/RUN key.

2. Press the MODE key until the rESU parameter is shown.

3. Press the HOLD/RUN key again.

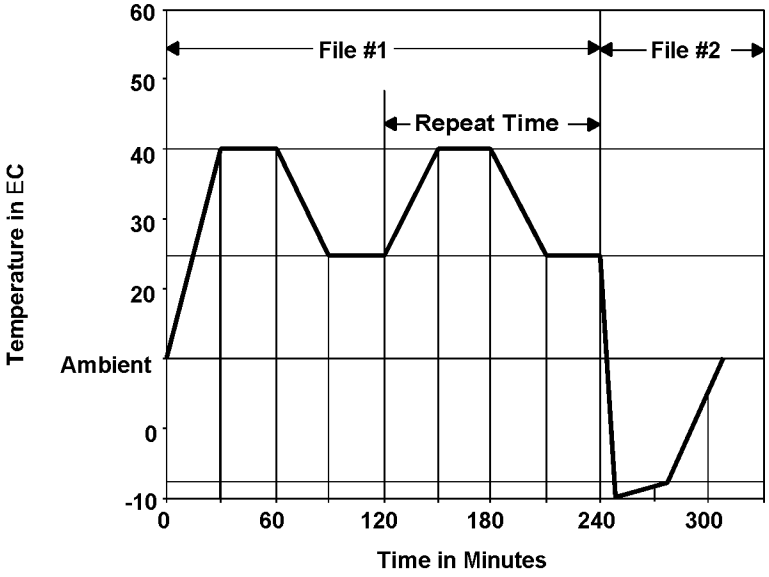
Shutdown

1. The final steps of each profile should bring the chamber back to ambient. This is to avoid contact with a hot load when unloading after a hot process or to avoid frosting and condensation on load and chamber interior after a cold process.

2. Remove load when chamber temperature is below 50E C (122E F) to avoid contact with a hot load. It is also recommended that the temperature be above 20E C to prevent condensation on sensitive products or the chamber wall.

3. Turn off power switch, cool switch (and humidity switch.)

Programming



The program mode is used to create a profile/file. The series 982 is capable of storing 4 profiles of up to 6 steps each.

1. If the RUN LED is on, press the HOLD/RUN key to place the controller in the hold mode.

2. Press the MODE key until the OPEr is displayed in the lower display.

3. Press the or arrow keys until Pro9 is shown in the upper display.

4. Press the MODE key. The lower display will show File and the upper display a number such as 1 through 4.

5. Press the or key to change to the number of the profile/file you wish to change.

6. Press the MODE key once you have the number assigned. StEP will be displayed in the lower display and 1 in the upper.

7. Press the MODE key.

8. Press the or arrow keys. One of the following step types will be displayed as you scroll through.

X Setpoint (StPt)

X Jump Loop (JL)

X Soak (also Wait for) (SoAH)

X End (END)

X Link (LfiL)

Press MODE to select the step type you desire.

If you want more details on step types, refer to the Watlow manual (especially chapter 7). The following sample program shows how to use the typical program steps.

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 40E C over a 10 minute period, holds 40E C for 10 minutes, then ramps to 25E C over another 10 minute period. This is held for 5 minutes. The above process is repeated using a jump step. The chamber is then ramped as quickly as possible to –10E C. The WPr (wait for process) allows the timing of this segment to begin when -8E C is reached. Then it is held for 10 minutes. Finally, the chamber is returned to ambient and the profile ends.

Sample Step Chart

File# 1	: Step Type Step Type	Set Point	Time			On Events	Off	Values	
Step # 1	: StPt	SP 40EC	HOUr	Min 10	SEC	Ent1			
			rAtE						
	9 SoAH		HOUr	Min	SEC	Ent1		WE	WPr
	9 JL						JF	JS	JC
	9 LFiL							LFiL	
	9 End							End	
Ramp to 40EC over 10 minutes.									

File# 1	: Step Type Step Type	Set Point	Time			On Events	Off	Values	
Step # 2	9 StPt	SP	HOUr	Min	SEC	Ent1			
			rAtE						
	: SoAH		HOUr	Min 1 0	SEC	Ent1		WE	WPr
	9 JL						JF	JS	JC
	9 LFiL							LFiL	
	9 End							End	
Hold at 40EC for 10 minutes.									

File# 1	: Step Type Step Type	Set Point	Time			On Events	Off	Values	
Step # 3	: StPt	SP 25°C	HOUr	Min 10	SEC	Ent1			
			rAtE						
	9 SoAH		HOUr	Min	SEC	Ent1		WE	WPr
	9 JL						JF	JS	JC
	9 LFiL							LFiL	
	9 End							End	
Ramp back to 25EC over 5 minutes.									

File# 1	: Step Type Step Type	Set Point	Time			On Events	Off	Values	
Step # 4	9 StPt	SP	HOUr	Min	SEC	Ent1			
			rAtE						
	: SoAH		HOUr	Min 5	SEC	Ent1		WE	WPr
	9 JL						JF	JS	JC
	9 LFiL							LFiL	
	9 End							End	
Hold 25EC for 10 minutes.									

File# 1	: Step Type Step Type	Set Point	Time			On Events	Off	Values	
Step # 5	9 StPt	SP	HOUr	Min	SEC	Ent1			
			rAtE						
	9 SoAH		HOUr	Min	SEC	Ent1		WE	WPr
	: JL						JF	JS 1	JC 1
	9 LFiL							LFiL	
	9 End							End	
Jump to step one and repeat one time.									

Sample Step Chart (Cont.)

File# 1	: Step Type Step Type	Set Point	Time			On Events	Off	Values	
Step # 6	9 StPt	SP	HOUr	Min	SEC	Ent1			
			rAtE						
	9 SoAH		HOUr	Min	SEC	Ent1		WE	WPr
	9 JL						JF	JS	JC
	: LFiL							LFiL 2	
	9 End							End	
Link to file 2 to continue process.									

File# 2	: Step Type Step Type	Set Point	Time			On Events	Off	Values	
Step # 1	: StPt	SP -10EC	HOUr	Min	SEC 1	Ent1			
			rAtE						
	9 SoAH		HOUr	Min	SEC	Ent1		WE	WPr
	9 JL						JF	JS	JC
	9 LFiL							LFiL	
	9 End							End	
Step ramp (1 second) to -10EC.									

File# 2	: Step Type Step Type	Set Point	Time			On Events	Off	Values	
Step # 2	9 StPt	SP	HOUr	Min	SEC	Ent1			
			rAtE						
	: SoAH		HOUr	Min	SEC	Ent1		WE	WPr
	9 JL						JF	JS	JC
	9 LFiL							LFiL	
	9 End							End	
Wait for process of -8E then hold for 10 min. You could have also used a guarantee soak.									

File# 2	: Step Type Step Type	Set Point	Time			On Events	Off	Values	
Step # 3	: StPt	SP 25EC	HOUr	Min 10	SEC	Ent1			
			rAtE						
	9 SoAH		HOUr	Min	SEC	Ent1		WE	WPr
	9 JL						JF	JS	JC
	9 LFiL							LFiL	
	9 End							End	
Bring the process back to normal before shutting down.									

File# 2	: Step Type Step Type	Set Point	Time			On Events	Off	Values	
Step # 4	9 StPt	SP	HOUr	Min	SEC	Ent1			
			rAtE						
	9 SoAH		HOUr	Min	SEC	Ent1		WE	WPr

	9 **JL**				**JF**	**JS**	**JC**
	9 **LFiL**					**LFiL**	
	: **End**					**End**	
Use either hold to continue last setpoint or off to shut down heat and cooling at end or profile.							

Master Step Chart

Make photocopies, keep original.

File#	: Step Type	Set Point	Time			On Events	Off	Values	
Step #	9 StPt	SP	HOUr	Min	SEC	Ent1			
			rAtE						
	9 SoAH		HOUr	Min	SEC	Ent1		WE	WPr
	9 JL						JF	JS	JC
	9 LFiL							LFiL	
	9 End							End	
Comments:									

File#	: Step Type	Set Point	Time			On Events	Off	Values	
Step #	9 StPt	SP	HOUr	Min	SEC	Ent1			
			rAtE						
	9 SoAH		HOUr	Min	SEC	Ent1		WE	WPr
	9 JL						JF	JS	JC
	9 LFiL							LFiL	
	9 End							End	
Comments:									

File#	: Step Type	Set Point	Time			On Events	Off	Values	
Step #	9 StPt	SP	HOUr	Min	SEC	Ent1			
			rAtE						
	9 SoAH		HOUr	Min	SEC	Ent1		WE	WPr
	9 JL						JF	JS	JC
	9 LFiL							LFiL	
	9 End							End	
Comments:									

File#	: Step Type	Set Point	Time			On Events	Off	Values	
Step #	9 StPt	SP	HOUr	Min	SEC	Ent1			
			rAtE						
	9 SoAH		HOUr	Min	SEC	Ent1		WE	WPr
	9 JL						JF	JS	JC
	9 LFiL							LFiL	
	9 End							End	
Comments:									

File#	: Step Type	Set Point	Time			On Events	Off	Values	
Step #	9 StPt	SP	HOUr	Min	SEC	Ent1			
			rAtE						
	9 SoAH		HOUr	Min	SEC	Ent1		WE	WPr
	9 JL						JF	JS	JC
	9 LFiL							LFiL	
	9 End							End	

Comments:

THEORY OF OPERATION

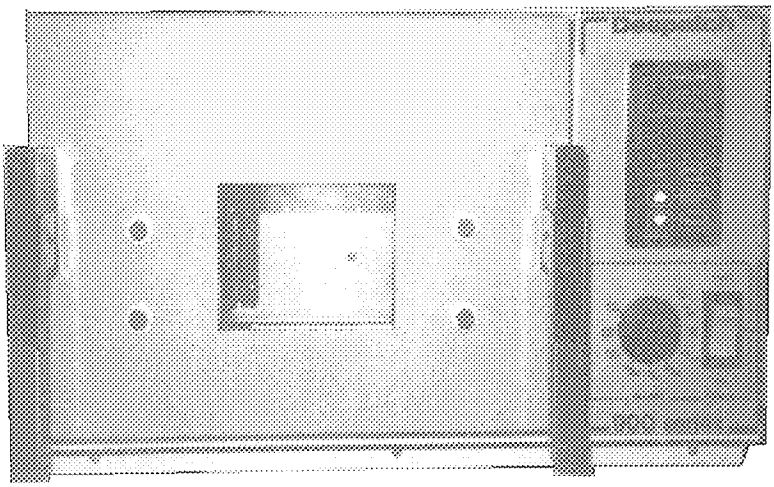
This THEORY OF OPERATION describes the:

X Despatch 900 Series Environmental Bench Chamber control panel,

X Watlow 982 control.

The Watlow Series 982 is a versatile microprocessor based control; powerful, yet simple to learn. In this chapter, you'll get an overview of the Watlow 982 and its software. You will light the displays and get a feel for moving through the control functions.

The Watlow 982 on your unit has been factory configured. No changes are required for proper operation.



3900 Series Environmental Bench Chamber

Control Panel Description

Component	Description
HI-LIMIT	This controller will shut down the cooling or heating functions when temperature setpoints are exceeded.
CONTROL	This controller operates the cooling or heating functions.
POWER	This toggle switch controls power to the unit.

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

Four dashes, "_ _ _ _", in the upper display indicates an error. Refer to the Watlow manual for definition of code.

Clearing an Error Code

An Err=nLA error code will clear when the alarm condition is corrected. To clear an Err=LAt error code:

1. Correct the alarm condition.

2. Disconnect power from the controller.

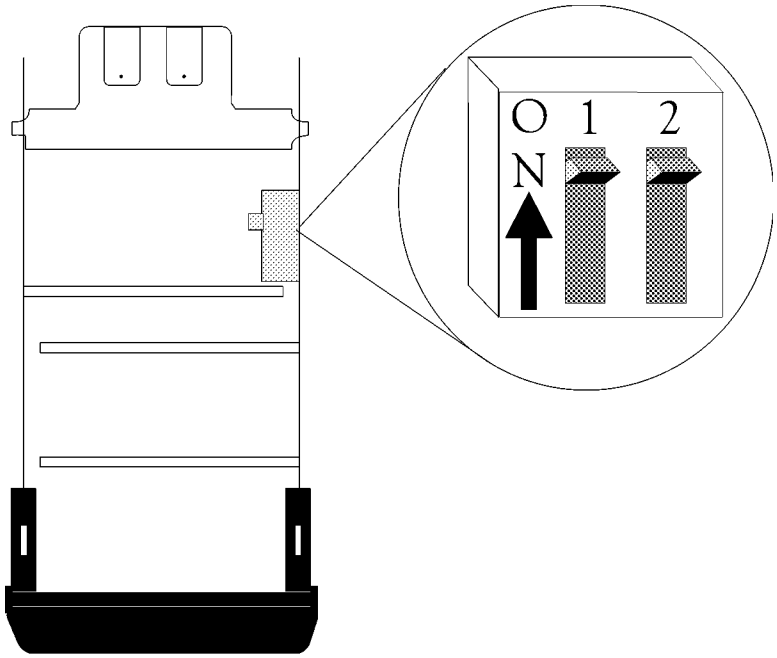
3. Power up the controller.

How to Clear an Alarm Code

A flashing LO and HI in the lower display indicates an alarm. Remove the alarm condition. A non-latching alarm automatically clears the alarm output. A latching alarm must be manually cleared by pressing the HOLD/RUN key.

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



4 DIP Switch Location and Orientation

settings.

DIP Switch No.	Function ON	OFF	Normal Operating Position	Description
1	Battery backup is enabled.	Battery backup is disabled.	ON	Battery backup on is the same as warm a start.
2	**Set** prompt menus and the **Fcty** prompt menus cannot be viewed. Hardware lockout of **Set** and **Fcty**.	**Set** prompt menus and the **Fcty** prompt menus can be viewed.	ON	**Set** prompt menus are Input, Output, Global and Communi-cations. **Fcty** prompt menus are Diagnostics and Calibration.

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.

2. Remove the control chassis from the case.

3. Release the two tabs on one side of the bezel by pressing firmly on each until you hear the tab snap when released.

4. Release the two tables on the opposite side of the control. You may need to rock the bezel back and forth several times to release the chassis.

Special Instructions

Press the HOLD/RUN key to place the controller in the hold mode.

Press the key and the key simultaneously for 3 seconds. The lower display will show the SEt parameter and the upper display will show InPt.

There are four menus under the SET prompt:

X Input menu - InPt
X Output menu - OtPt
X Global menu - gLbL
X Communications menu - COM

Use the MODE key to select a menu.

Use the key and the key to select setup data.

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

Make photocopies of these originals.
Record any changes in the value column of the photocopy

Input (InPt) Operation Menu Parameters and Descriptions

Operation Parameters	Value	Your Range	Factory Default	Typical Despatch Setting
In1		J, K (appears as H), t, n, c, r, S, b, Pt2, rtd, rt.d, 0-5, 0-10,4-201-5,0-20,0-50,0-100 Dependent on model number.	J or r	t
dEC1		0.,0.0, 0.00, 0.000	0	
rL1		Lowest limit to setpoint range. Sensor range Low to range Hi.	Input selection dependent	-75
rH1		Highest limit to setpoint range. Sensor range Low to range Hi.	Input selection dependent	180
CAL1		Calibration offset. ∀999E/∀555E/∀999 Units	0	0
rtd1		JIS or din	din	din
Ftrl		Display filter. 0 to 60 seconds	0	1

Output (OtPt) Operation Menu Parameters and Descriptions

Operation Parameters	Value	Your Range	Factory Default	Typical Despatch Setting
Ot1		Ht or CL	ht	ht
Prc1		0-5, 1-5, 0-10, 0-20, 4-20	4-20	
HYS1		0E-999EF, 0E-555EC, 0U-999U 0.0E-99.9EF, 0.0E-55.5EC, 0.0U-99.9U	3EF/2EC/3U	1
Ot2		Ht, CL or no	CL	CL
Prc2		0-5, 1-5, 0-10, 0-20, 4-20	4-20	
HYS2		0E-999EF, 0E-555EC, 0U-999U 0.0E-99.9EF, 0.0E-55.5EC, 0.0U-99.9U	3EF/2EC/3U	1
AL2		Pr1, dE1 or rAtE	Pr1	
LAt2		LAt or nLA	nLA	
SIL2		ON or OFF	OFF	
Ot3		AL3, AL3n, Ent3 or no	AL	Ent3
AL3		Pr1,dE1 or rAtE (if Ot3 is AL3 or AL3n)	Pr1	
LAt3		LAt or nLA, Dependent on AL3 = Pr or dE.	nLA	
HYS3		0E-999EF, 0E-555EC, 0U-999U 0.0E-99.9EF, 0.0E-55.5EC, 0.0U-99.9U	3EF/2EC/3U	1
LAt3		LAt or nLA, Dependent on AL3 = Pr or dE.	nLA	
SIL3		On or OFF	OFF	

Global (gLbL) Operation Menu Parameters and Descriptions

Operation Parameters	Value	Your Range	Factory Default	Typical Despatch Setting
C _ F		C or F, Will not appear if In = 0-5 or 4-20.	F	C
Err		LAt or nLA (error latching)	nLA	nLA
Ei1		LOC, ALr, Hold, FIL_, WE, OFF, no	no	WE
Ei2		LOC, ALr, hoLd, FIL1, FIL2, FIL3, FIL4, WE, OFF or no	no	
Anun		ON or OFF (flashes alarm messages)	On	On
LoP		-100% to HiP	-100	-100

Operation Parameters	Value	Your Range	Factory Default	Typical Despatch Setting
HiP		LoP to 100%	100	100
AtSP		50% to 150%	90	90
PtYP		ti or rAtE	ti	ti
gSd		0-99E, 0-55E, 0-99U 0.0-9.9E, 0.0-5.5E, 0.0U-9.9U	0	0
POUt		Cont, HOLd or Abrt, IdSP(idle setpt)	Cont	Cont
IdSP		rL1 to rH1 (shows only if POUt selects)	75EF/25EC/75U	

Operation Parameters	Value	Your Range	Factory Default	Typical Despatch Setting
PStr		(Profile starts at current) StPt or Proc	StPt	StPt
LOC		0 to 3 (locks 1=mode, 2=mode&run, 3=all)	0	1

Communication (COM) Operation Menu Parameters and Description

Operation Parameters	Value	Your Range	Factory Default	Typical Despatch Setting
bAUd		300, 600, 1200, 2400, 4800, 9600	9600	9600
dAtA		7o = Odd parity, 7E = Even parity 8n = 8 data bits and no parity	7o	7o
Prot		FULL or On	FULL	On
Addr		0 to 31	0	0
intF		485/422	485	485

PID Operation Menu Parameters and Descriptions

Operation Parameters	Value	Your Range	Factory Default	Typical Despatch Setting
Pb1		If dFL = US: 0-999EF/0-555EC/0-999 units 0-99.9EF/0-55.5EC/0-99.9 Units If dFL = S1: 0 to 99.9% 0 = ON/OFF control. HYS1 - switch diff.	25EF/14EC/25U 3.0%	5
Pb2		Same as Pb1. Won't appear if Ot 2 - no.	0E	5
rE1/It1		If dFL = SI - Reset: 0.00 to 9.99 repeats/min. If dFL = US - Integral: 0 and 00.1 to 99.9 min./repeat 0.00 = no reset. Won't appear if Pb1 = 0.	0.00 repeats/min. rE1	0.24
rE2/It2		Same as rE1. Will not appear if Pb2 = 0.	0.00 repeats/min.	0.10
rA1/dE1		If dFL = SI - 0.00 to 9.99 min. If dFL = US - 0.00 = No Rate. Won't appear if Pb1 = 0.	0.00 min.	0.00
rA2/dE2		Same as rA1. Will not appear if Pb2 = 0.	0.00 min.	0.00
Ct1		1 to 60 seconds Won't appear if Pb1 - 0	5 seconds	1
Ct2		1 to 60 seconds Won't appear if Pb2 = 0 or Ot2 = no.	5 seconds	2
db		∀0-999EF/∀0-555EC/∀0-999 Units ∀0.0-9.9EF/∀0.0-5.5EC/∀0.0-9.9 Units Appears if ht/CL or CL/ht.	0	0