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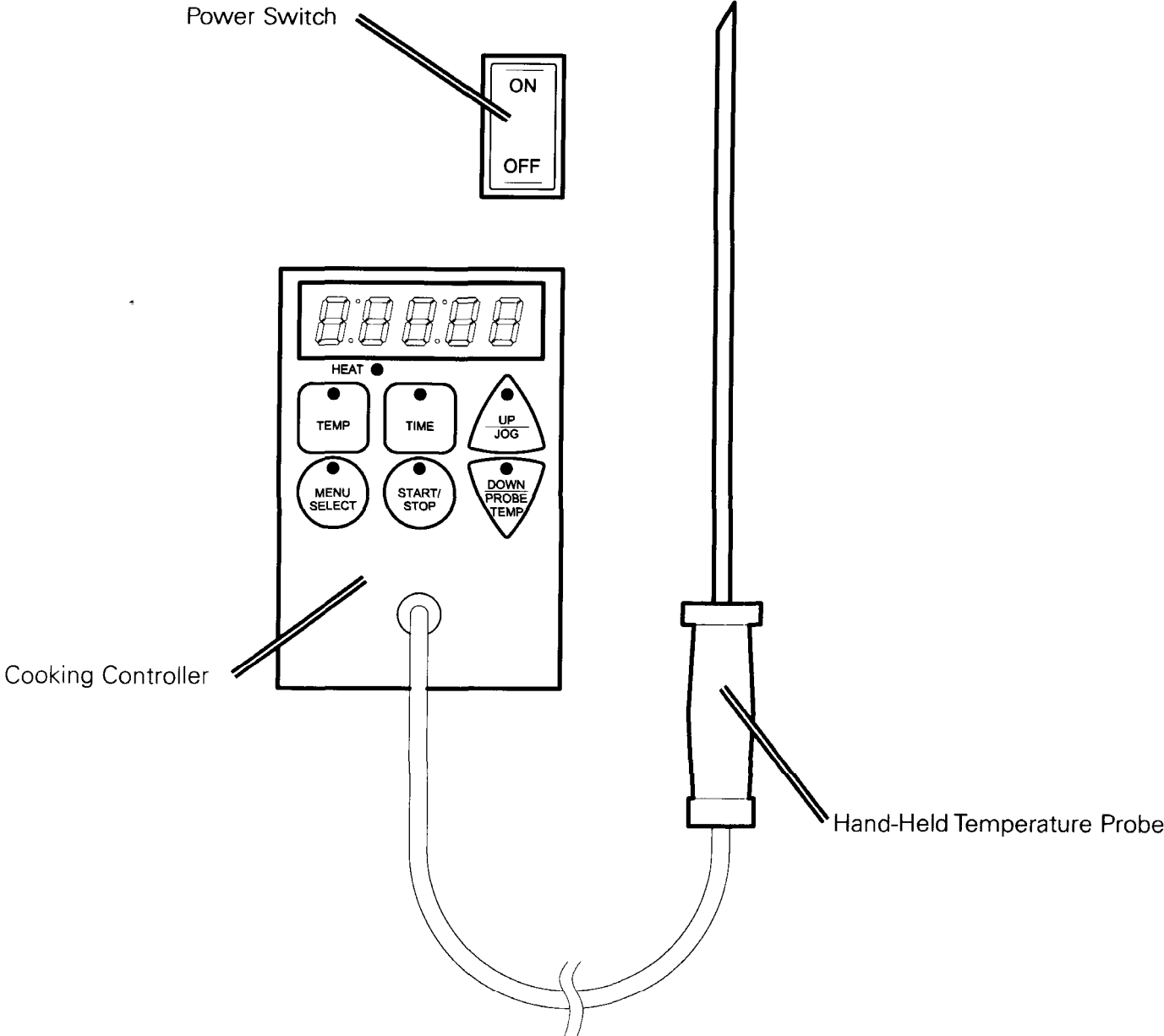


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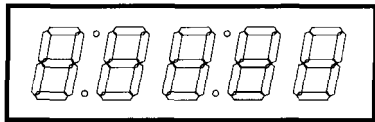
1. Cooking Controller

This section describes how to operate the Cooking Controller.



1-01. Buttons and Functions

This section describes the basic function of each button on the controller.



Used to display Times, Temperatures and other various messages.



Used for setting and display Cooking and Holding Temperature.



Used for setting and display Cooking and Holding Time.



Used to select menus 1-10.



Used for starting and stopping a menu (Cooking Cycle).



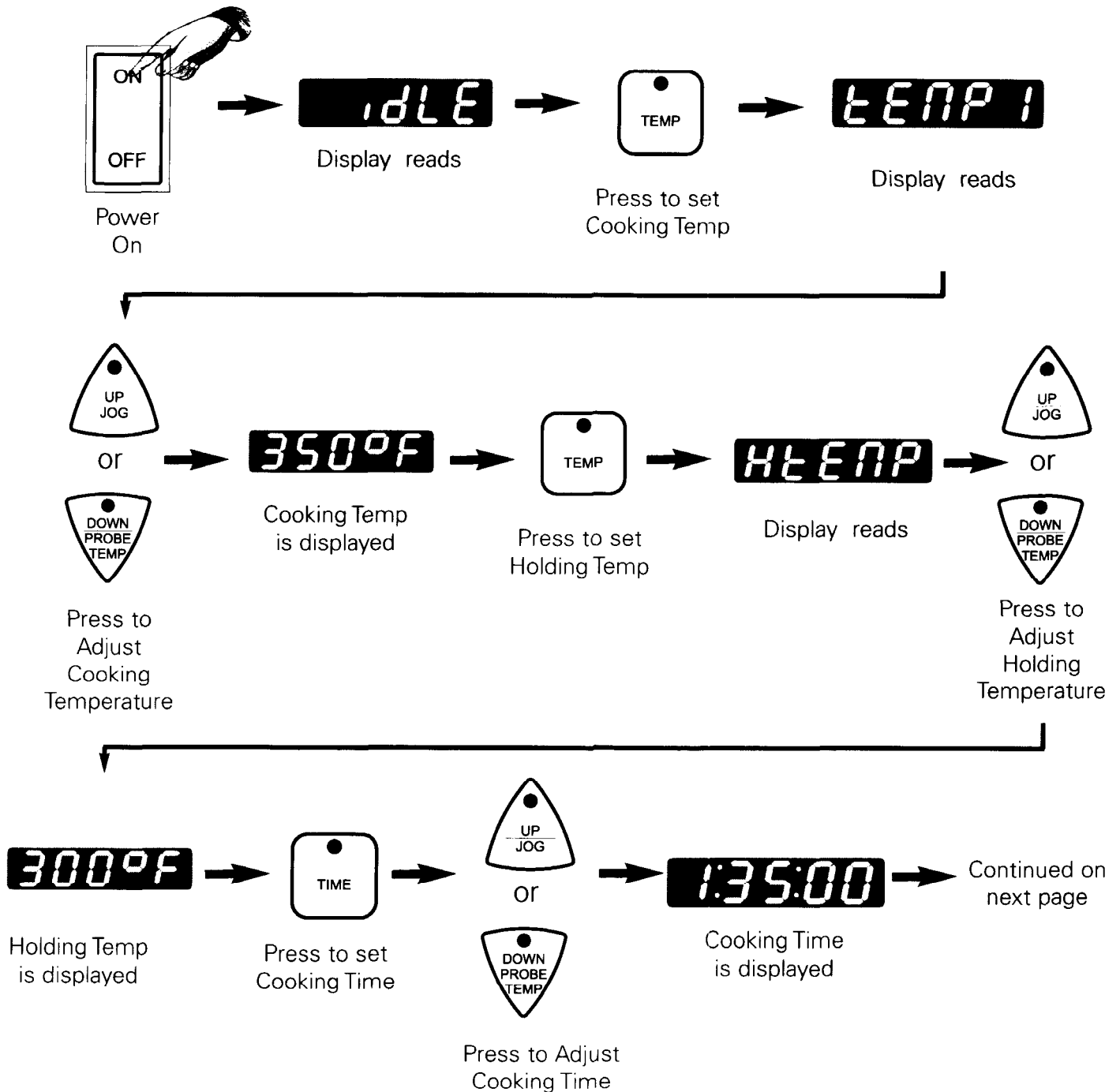
Used to increase Time and Temperature. Also used to rotate the internal spits when the door is open.



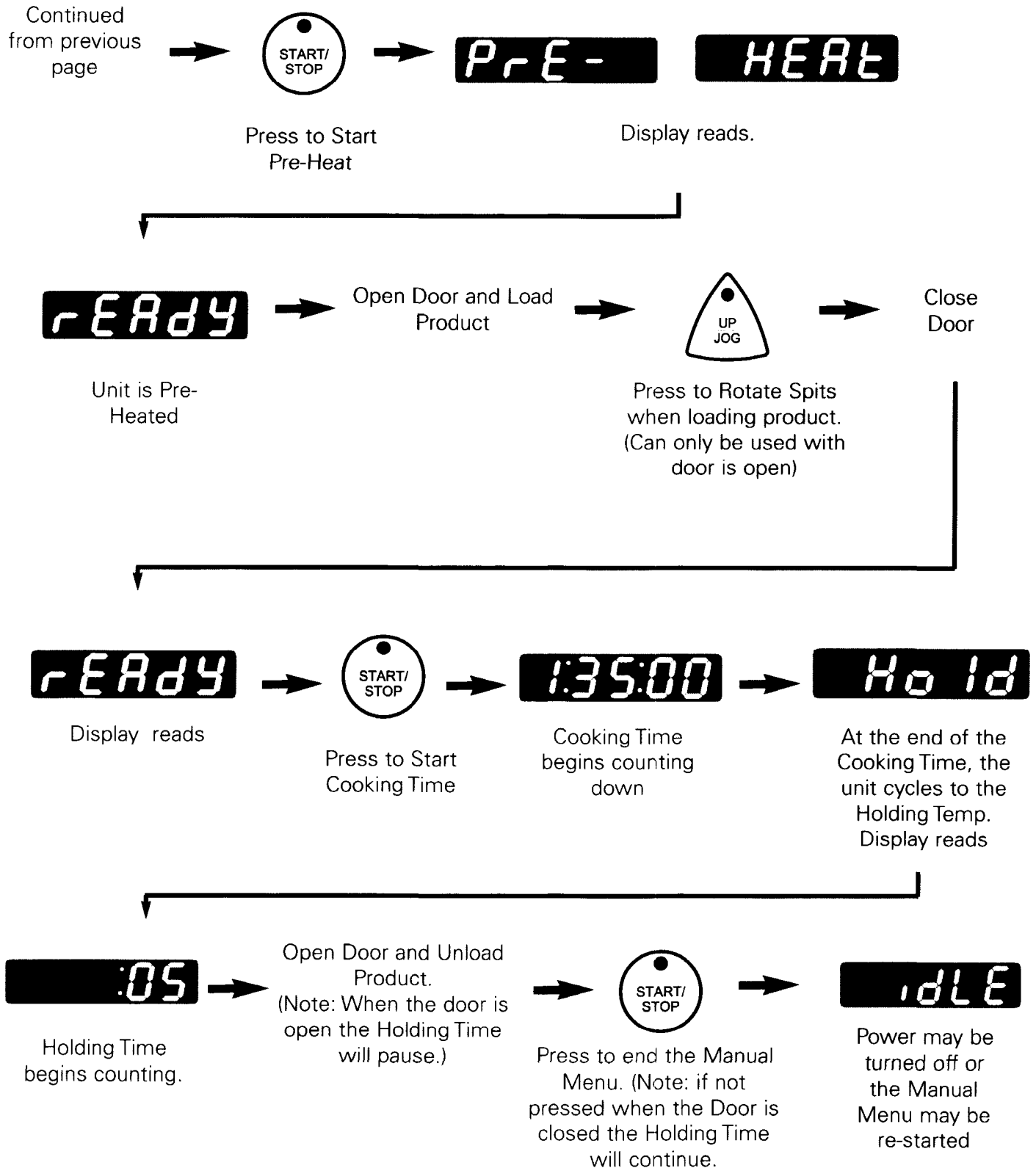
Used to decrease Time and Temperature. Also used to activate the Hand-Held Temperature Probe (when door is open).

1-02. Setting and running a Manual Menu

This section describes how to set and run a Manual Menu (A Non-Programmed Menu). The Manual Menu controls Cooking Temperature, Holding Temperature, and Cooking Time.

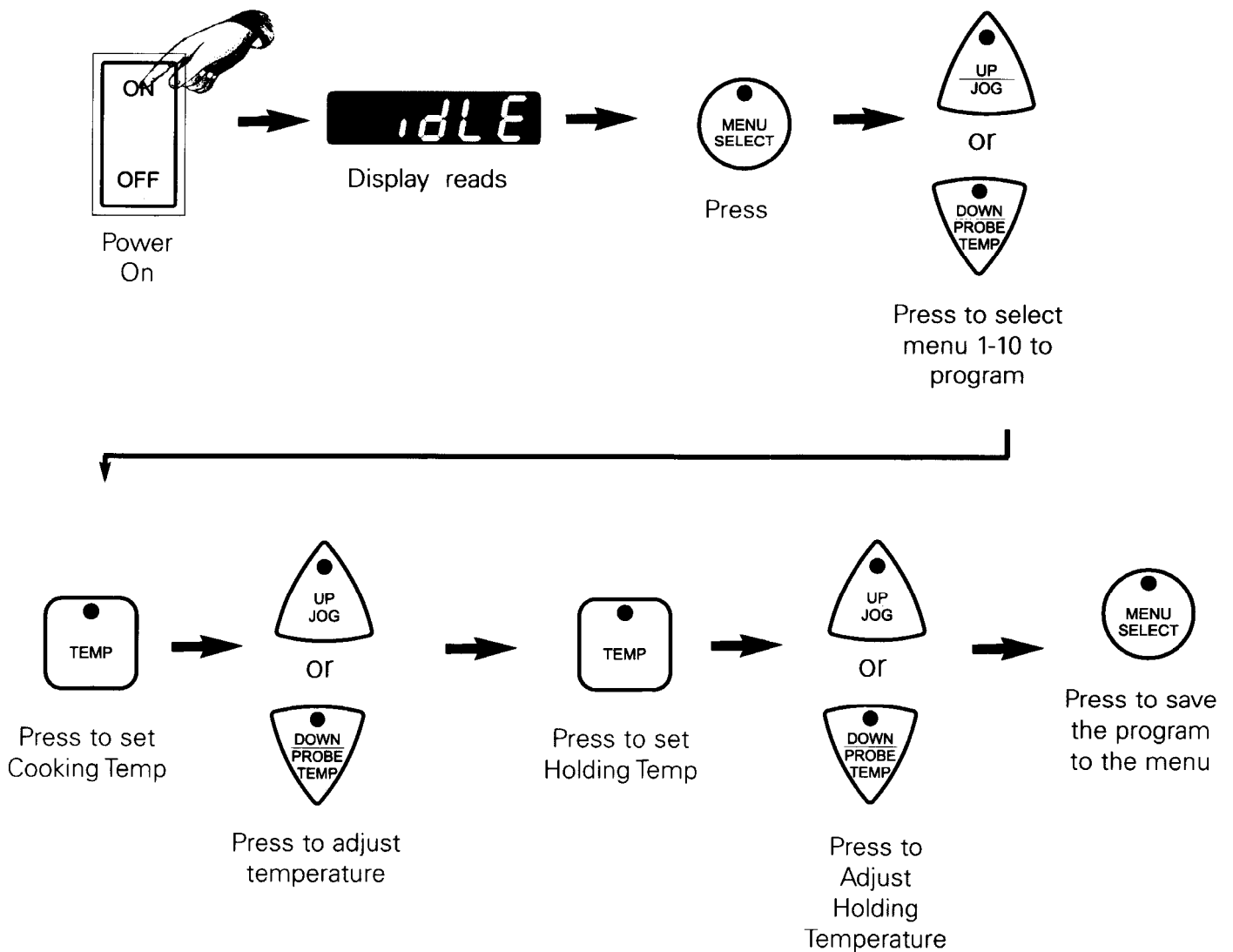


1-02. Setting and running a Manual Menu. (Continued)



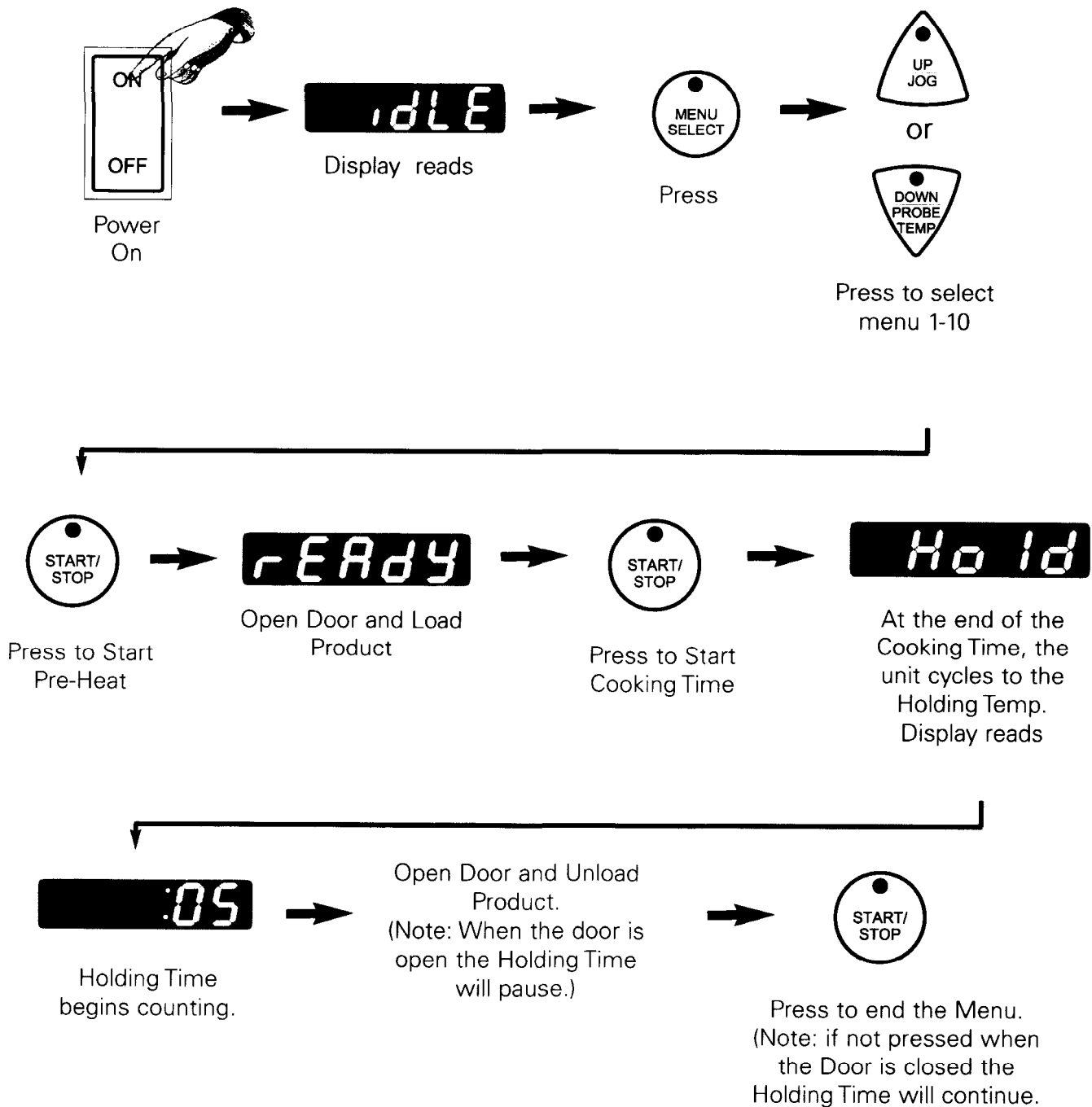
1-03. Programming a Menu

This section describes how to program a Menu into the Cooking Controller. A programmed Menu contains Cooking Temperature, Holding Temperature and Cooking Time. This function is useful when cooking various products at different cooking temperatures and times.



1-04. Running a Programmed Menu

This section describes how to run a menu. If you have not programmed a menu please see Section 1-03.



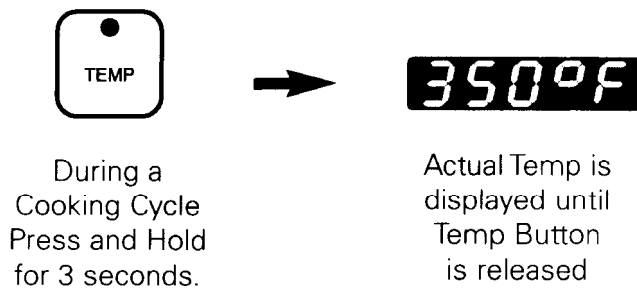
1-05. Cancelling a Cooking Cycle or Programmed Menu

This section describes how to cancel a Cooking Cycle or Programmed Menu.



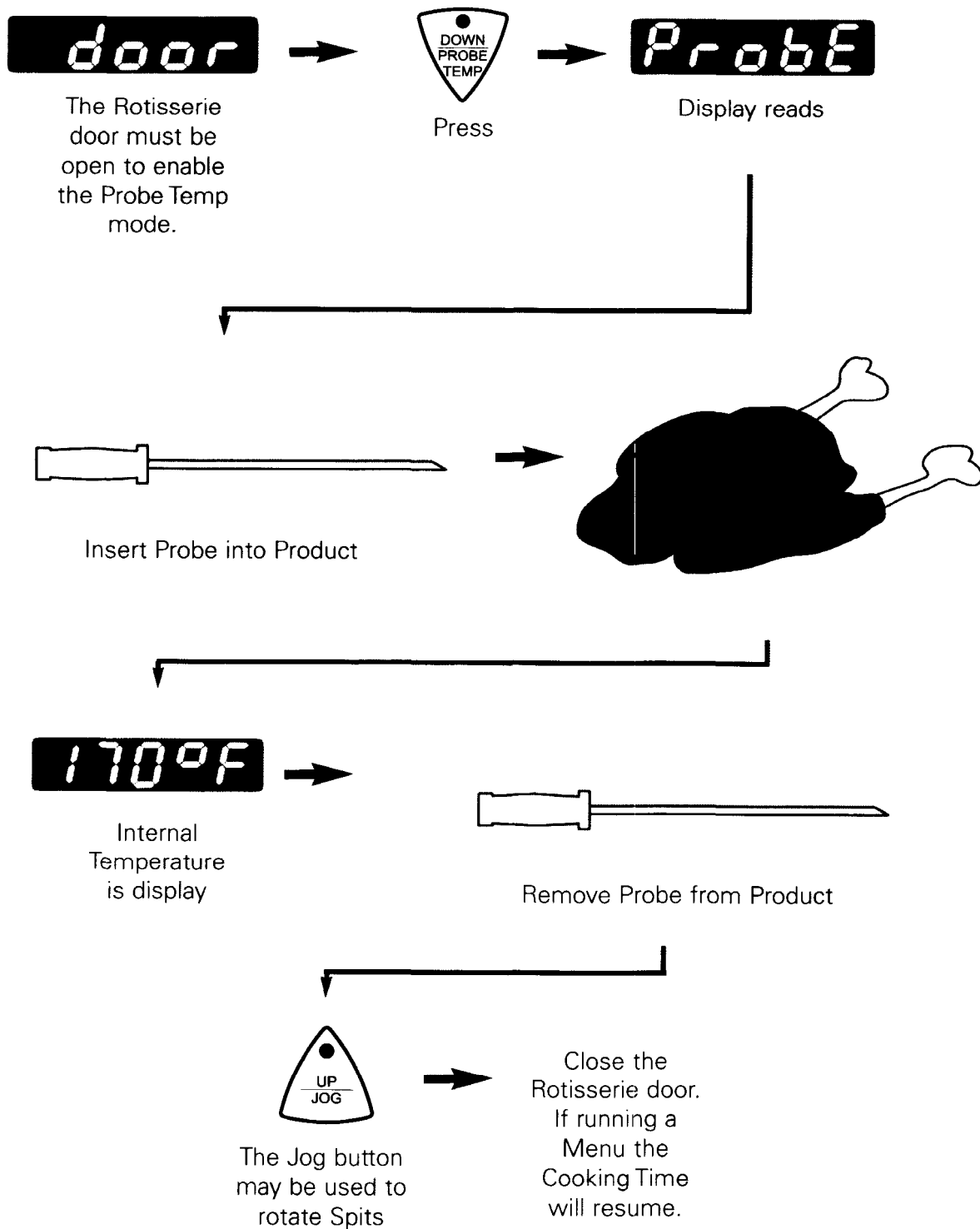
1-06. Viewing actual temperature of Rotisserie

This section describes how to view the actual temperature of the Rotisserie.



1-07. Using the Hand-Held Temperature Probe

This section describes how to use the Hand-Held Temperature Probe. The Probe is used to check the internal temperature of the product being cooked.



WATLOW CONTROLS

1241 Bundy Blvd.
Winona, MN 55987

**PRODUCT SPECIFICATION
FOR
Giles Enterprises
MiniChef 2000
Rotisserie Oven**

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(9/11/03) (Rev. A-1)
(9/16/03) (Rev. A-2)

Approvals:

Name: _____

Name: _____

Title: _____

Title: _____

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2. REVISION LOG

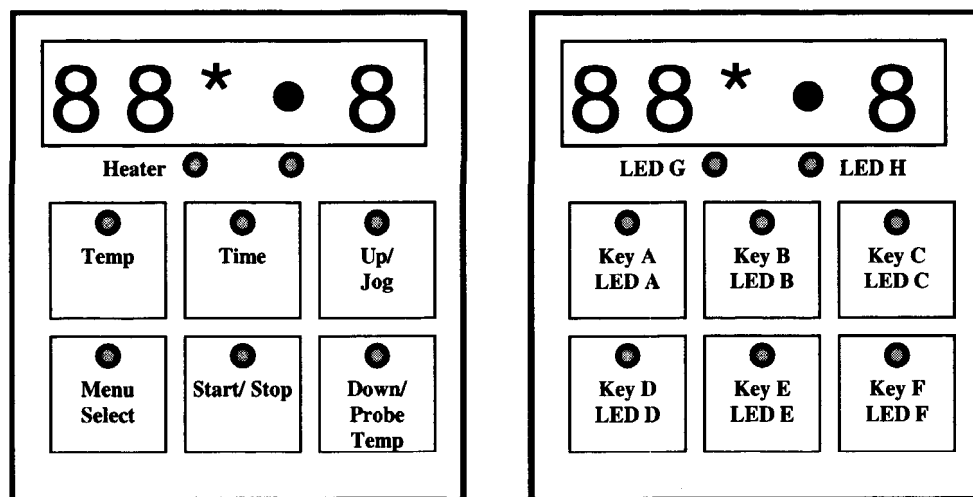
Revision	Date	Initials	Description
Rev. A-1	9/11/03	JW	<ul style="list-style-type: none">• Initial creation.
Rev. A-2	9/16/03	JW	<ul style="list-style-type: none">• Added door to segment display as well as adding 3.1.3.4 which describes the operation of the Spit Motor when the door is open.
			<ul style="list-style-type: none">•
			<ul style="list-style-type: none">•

3. SOFTWARE DESCRIPTION

3.1 Application

3.1.1 Definitions

The definitions herein defined are for **reference only** and are provided for the sole purpose of maintaining consistency throughout the Software Specification Document. Furthermore the definitions (names) provide no technical information and do not affect the end operations expected of the control.



(Graphic provided for reference only.)

3.1.1.1 Inputs and Outputs

- Sensor Input 1 will be defined as the oven temperature.
- Sensor Input 2 will be defined as the probe temperature.
- Event Input 1 will not be door open.
- Event Input 2 will not be used.
- Output 1 will be defined as the oven heater.
- Output 2 will be defined as the spit motor control.
- Output 3 will not be used.
- Output 4 will be defined as the fan.
- Output 5 will be defined as audible alarm.

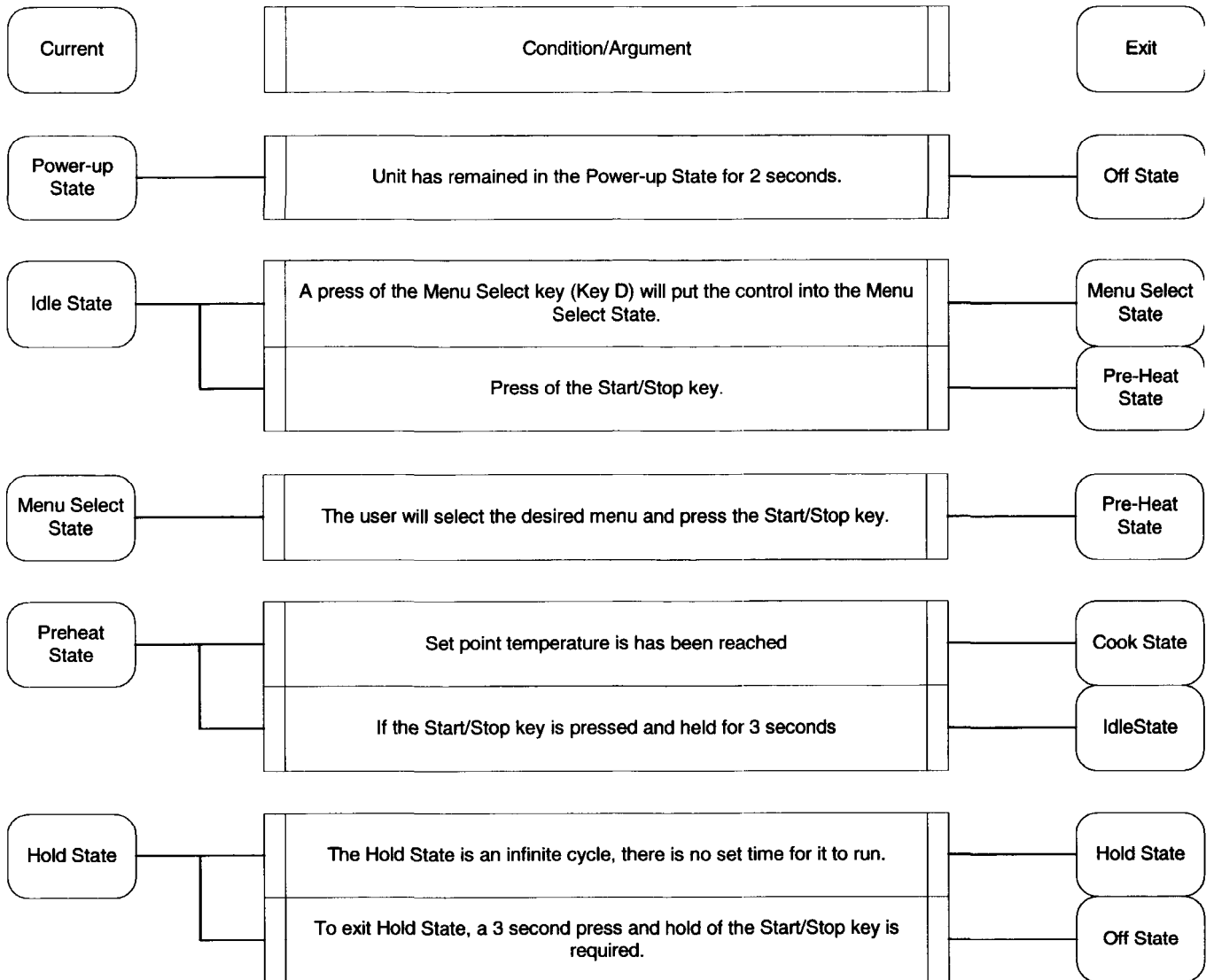
3.1.1.2 Keys

- Key A is defined as the Temperature key.
- Key B is defined as the Time key.
- Key C is defined as the Up/Spit Job key.
- Key D is defined as the Menu Select key.
- Key E is defined as the Start/Stop key.
- Key F is defined as the Down/Probe Temp key.

3.1.1.3 LEDs

- LED A will be defined as the Temperature LED.
- LED B will be defined as the Time LED.
- LED C will be defined as the Up/Spit Job LED.
- LED D will be defined as the Menu Select LED.
- LED E will be defined as the Start/Stop LED.
- LED F will be defined as the Down/Probe Temp LED.
- LED G will be defined as the Heater LED.
- LED H will not be defined.

3.1.2 States



3.1.2.1 Power-up State

Input / Output	Sensor Input 1 – Oven Temp	• The Oven Temperature sensor (Sensor Input 1) will always read temperature.
	Sensor Input 2 – Probe Temp	• The Probe Temperature sensor (Sensor Input 2) will always read temperature.
	Event Input 1 – Door Switch	• The Door Switch (Event Input 1) will be sensing condition of the door.
	Output 1 – Heater	• The Heater (Output 1) will be continuously off.
	Output 2 – Spit Motor Control	• The Spit Motor Control (Output 2) will be continuously off.
	Output 4 – Fan	• The Fan (Output 4) will be continuously off.
	Output 5 – Audible Alarm	• The Audible Alarm (Output 5) will be continuously off.

Keys	Key A – Temperature	• Any press of the Temperature key (Key A) will have no effect.
	Key B – Time	• Any press of the Time key (Key B) will have no effect.
	Key C – Up/Spit Jog	• Any press of the Up/Spit Jog key (Key C) will have no effect.
	Key D – Menu Select	• Any press of the Menu Select key (Key D) will have no effect.
	Key E – Start/Stop	• Any press of the Start/Stop key (Key E) will have no effect.
	Key F – Down/Probe Temp	• Any press of the Down/Probe Temp key (Key F) will have no effect.

LED	LED A – Temperature	• The Temperature LED (LED A) will be continuously off.
	LED B – Time	• The Time LED (LED B) will be continuously off.
	LED C – Up/Spit Jog	• The Up/Spit Jog LED (LED C) will be continuously off.
	LED D – Menu Select	• The Menu Select LED (LED D) will be continuously off.
	LED E – Start/Stop	• The Start/Stop LED (LED E) will be continuously off.
	LED F – Down/Probe Temp	• The Down/Probe Temp LED (LED F) will be continuously off.
	LED G – Heater	• The Heater LED (LED G) will be continuously off.

Segment Display	• The segment display will be blank (~~~~~).
------------------------	--

3.1.2.2 Idle State

Input / Output	Sensor Input 1 – Oven Temp	<ul style="list-style-type: none"> The Oven Temperature sensor (Sensor Input 1) will always read temperature.
	Sensor Input 2 – Probe Temp	<ul style="list-style-type: none"> The Probe Temperature sensor (Sensor Input 2) will always read temperature.
	Event Input 1 – Door Switch	<ul style="list-style-type: none"> The Door Switch (Event Input 1) will be sensing condition of the door.
	Output 1 – Heater	<ul style="list-style-type: none"> The Heater (Output 1) will be continuously off.
	Output 2 – Spit Motor Control	<ul style="list-style-type: none"> The Spit Motor Control (Output 2) will be continuously off.
	Output 4 – Fan	<ul style="list-style-type: none"> The Fan (Output 4) will be continuously off.
	Output 5 – Audible Alarm	<ul style="list-style-type: none"> The Audible Alarm (Output 5) will be continuously off.

Keys	Key A – Temperature	<ul style="list-style-type: none"> Press of Temperature key (Key A) will display the last ran set point.
	Key B – Time	<ul style="list-style-type: none"> Pressing the Time key (Key B) will display the last ran time.
	Key C – Up/Spit Jog	<ul style="list-style-type: none"> The Up/Spit Jog key (Key C) will be active in the Idle State when the Temperature, Time or Menu Select keys have been pressed. It will be used as an increment key to scroll up during an edit of the temperature or time. When the door is open during the Idle State, the user will be allowed to use the Up/Spit Jog key (Key C) to jog the spit motor by pressing Key C.
	Key D – Menu Select	<ul style="list-style-type: none"> Pressing the Menu Select key (Key D) will allow the user to scroll through the menus. Pressing the Menu Select key (Key D) a second time will allow the user to change the menu settings, such as temperature, hold temperature and time.
	Key E – Start/Stop	<ul style="list-style-type: none"> Pressing the Start/Stop key (Key E) will start the select menu, if set point has not been met control will go into Preheat State. If set point has been met when the Start/Stop key (Key E) has been pressed, control will go into Cook State.
	Key F – Down/Probe Temp	<ul style="list-style-type: none"> A press of the Down/Probe Temp key (Key F) will display the temperature that the probe is currently reading. Otherwise the only other time that the Down/Probe Temp key will be active in the Idle State is when the Temperature, Time or Menu Select keys have been pressed. It will be used as a decrement key to scroll down during an edit of the temperature, time or menu select parameters.

LED	LED A – Temperature	<ul style="list-style-type: none"> The Temperature LED (LED A) will be continuously off.
	LED B – Time	<ul style="list-style-type: none"> The Time LED (LED B) will be continuously off.
	LED C – Up/Spit Jog	<ul style="list-style-type: none"> The Up/Spit Job LED (LED C) will only be on when either the Temperature key (Key A), Time key (Key B), or the Menu Select key (Key D) have been pressed.
	LED D – Menu Select	<ul style="list-style-type: none"> The Menu Select LED will be continuously off.
	LED E – Start/Stop	<ul style="list-style-type: none"> The Start/Stop LED (LED E) will be continuously on when the Start/Stop key (Key E) has been pressed. Otherwise the Start/Stop LED will be continuously off.
	LED F – Down/Probe Temp	<ul style="list-style-type: none"> The Down/Probe Temp LED (LED F) will only be on when either the Temperature key (Key A), Time key (Key B), or the Menu Select key (Key D) have been pressed.
	LED G – Heater	<ul style="list-style-type: none"> The Heater LED (LED G) will be continuously off.

Segment Display	<ul style="list-style-type: none"> In the IDLE State the segment display will read ~idle. When the user presses the Menu Select key all menus that have been programmed will be displayed by digit only, ~~~~3. If no menus are programmed the display will show ~none. If the Temperature key is pressed the display will show the set point temperature ~325F. If the Time key is pressed the display will show the cook time ~1100. If door is open during Idle State the display will read ~door.
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3.1.2.3 Preheat State

Input / Output	Sensor Input 1 – Oven Temp	<ul style="list-style-type: none"> The Oven Temperature sensor (Sensor Input 1) will always read temperature.
	Sensor Input 2 – Probe Temp	<ul style="list-style-type: none"> The Probe Temperature sensor (Sensor Input 2) will always read temperature.
	Event Input 1 – Door Switch	<ul style="list-style-type: none"> The Door Switch (Event Input 1) will be sensing condition of the door.
	Output 1 – Heater	<ul style="list-style-type: none"> The Heater (Output 1) will be continuously on when heat is being called for.
	Output 2 – Spit Motor Control	<ul style="list-style-type: none"> The Spit Motor Control (Output 2) will be continuously on.
	Output 4 – Fan	<ul style="list-style-type: none"> The Fan (Output 4) will be continuously on.
	Output 5 – Audible Alarm	<ul style="list-style-type: none"> The Audible Alarm (Output 5) will sound continuously when set point has been reached for 5 seconds. Otherwise Audible Alarm will be continuously off.

Keys	Key A – Temperature	<ul style="list-style-type: none"> Press of Temperature key (Key A) will display the last ran set point.
	Key B – Time	<ul style="list-style-type: none"> Any press of the Time key (Key B) will have no effect.
	Key C – Up/Spit Jog	<ul style="list-style-type: none"> The Up/Spit Jog key (Key C) will be active in the Preheat State when the Temperature key has been pressed. It will be used as an increment key to scroll up during an edit of the temperature. When the door is open during the Preheat State, the user will be allowed to use the Up/Spit Jog key (Key C) to jog the spit motor by pressing Key C.
	Key D – Menu Select	<ul style="list-style-type: none"> Any press of the Menu Select key (Key D) will have no effect.
	Key E – Start/Stop	<ul style="list-style-type: none"> Pressing the Start/Stop key (Key E) during the Preheat State will start the countdown even it set point has not been reached.
	Key F – Down/Probe Temp	<ul style="list-style-type: none"> A press of the Down/Probe Temp key (Key F) will display the temperature that the probe is currently reading. Otherwise the only other time that the Down/Probe Temp key will be active in the Preheat State is when the Temperature key has been pressed. It will be used as a decrement key to scroll down during an edit of the temperature.

LED	LED A – Temperature	<ul style="list-style-type: none"> If the Temperature key is pressed during the Preheat State, the Temperature LED it will flash rapidly.
	LED B – Time	<ul style="list-style-type: none"> The Time LED will be continuously off.
	LED C – Up/Spit Jog	<ul style="list-style-type: none"> The Up/Spit Jog LED (LED C) will only be on when either the key (Key A) has been pressed.
	LED D – Menu Select	<ul style="list-style-type: none"> The Menu Select LED will be continuously off.
	LED E – Start/Stop	<ul style="list-style-type: none"> The Start/Stop LED will flash slowly in the Preheat State.
	LED F – Down/Probe Temp	<ul style="list-style-type: none"> The Down/Probe Temp LED will be continuously on when the probe temperature is being displayed or when the temperature is being edited in the Preheat State.
	LED G – Heater	<ul style="list-style-type: none"> LED G will be continuously on when the heater is calling for heat.
	LED H – Unused	<ul style="list-style-type: none"> LED H will be continuously off.

Segment Display	<ul style="list-style-type: none"> The segment display will read pre~~ then heat~ for a second. It will then display the actual temperature ~123F until set point has been reached. At which time the display will read ready. If the door is open during the Preheat State the display will read ~door.
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3.1.2.4 Cook State

Input / Output	Sensor Input 1 – Oven Temp	<ul style="list-style-type: none"> The Oven Temperature sensor (Sensor Input 1) will always read temperature.
	Sensor Input 2 – Probe Temp	<ul style="list-style-type: none"> The Probe Temperature sensor (Sensor Input 2) will always read temperature.
	Event Input 1 – Door Switch	<ul style="list-style-type: none"> The Door Switch (Event Input 1) will be sensing condition of the door.
	Output 1 – Heater	<ul style="list-style-type: none"> The Heater (Output 1) will be continuously on when heat is being called for.
	Output 2 – Spit Motor Control	<ul style="list-style-type: none"> The Spit Motor Control (Output 2) will be continuously on.
	Output 4 – Fan	<ul style="list-style-type: none"> The Fan (Output 4) will be continuously on.
	Output 5 – Audible Alarm	<ul style="list-style-type: none"> The Audible Alarm (Output 5) will sound continuously for 5 seconds when timer expires. Otherwise Audible Alarm will be continuously off.

Keys	Key A – Temperature	<ul style="list-style-type: none"> Press of Temperature key (Key A) will display the last ran set point.
	Key B – Time	<ul style="list-style-type: none"> Any press of the Time key (Key B) will have no effect.
	Key C – Up/Spit Jog	<ul style="list-style-type: none"> The Up/Spit Jog key (Key C) will be active in the Cook State when the Temperature key has been pressed. It will be used as an increment key to scroll up during an edit of the temperature. When the door is open during the Cook State, the user will be allowed to use the Up/Spit Jog key (Key C) to jog the spit motor by pressing Key C.
	Key D – Menu Select	<ul style="list-style-type: none"> Any press of the Menu Select key (Key D) will have no effect.
	Key E – Start/Stop	<ul style="list-style-type: none"> Pressing the Start/Stop key (Key E) during the Cook State will cancel the remaining countdown time and go back into the Idle State.
	Key F – Down/Probe Temp	<ul style="list-style-type: none"> A press of the Down/Probe Temp key (Key F) will display the temperature that the probe is currently reading. Otherwise the only other time that the Down/Probe Temp key will be active in the Preheat State is when the Temperature key has been pressed. It will be used as a decrement key to scroll down during an edit of the temperature.

LED	LED A – Temperature	<ul style="list-style-type: none"> If the Temperature key is pressed during the Cook State the Temperature LED will flash rapidly.
	LED B – Time	<ul style="list-style-type: none"> If the Time key is pressed during the Cook State the Time LED it will flash rapidly.
	LED C – Up/Spit Jog	<ul style="list-style-type: none"> The Up/Spit Jog LED (LED C) will only be on when either the Temperature key (Key A) or Time key (Key B) has been pressed.
	LED D – Menu Select	<ul style="list-style-type: none"> The Menu Select LED will be continuously off.
	LED E – Start/Stop	<ul style="list-style-type: none"> The Start/Stop LED will be continuously on during the Cook State.
	LED F – Down/Probe Temp	<ul style="list-style-type: none"> The Down/Probe Temp LED will be continuously on when the probe temperature is being displayed or when the Temperature or Time keys have been pressed during the Cook State.
	LED G – Heater	<ul style="list-style-type: none"> LED G will be continuously on when the heater is calling for heat.
	LED H – Unused	<ul style="list-style-type: none"> LED H will be continuously off.

Segment Display	<ul style="list-style-type: none"> In the Cook State the control will display the remaining time left to the Cook Cycle ~1234. If the Temperature key has been pressed the control will display set point ~123F. If the Time key has been pressed the control will display the remain time left ~1234. If the door is open during the Cook State the display will read ~door.
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3.1.2.5 Hold State

Input / Output	Sensor Input 1 – Oven Temp	• The Oven Temperature sensor (Sensor Input 1) will always read temperature.
	Sensor Input 2 – Probe Temp	• The Probe Temperature sensor (Sensor Input 2) will always read temperature.
	Event Input 1 – Door Switch	• The Door Switch (Event Input 1) will be sensing condition of the door.
	Output 1 – Heater	• The Heater (Output 1) will be continuously on when heat is being called for.
	Output 2 – Spit Motor Control	• The Spit Motor Control (Output 2) will be continuously on.
	Output 4 – Fan	• The Fan (Output 4) will be continuously on.
	Output 5 – Audible Alarm	• The Audible Alarm (Output 5) will be continuously off.

Keys	Key A – Temperature	• Any press of the Temperature key (Key A) will have no effect.
	Key B – Time	• Any press of the Time key (Key B) will have no effect.
	Key C – Up/Spit Jog	• When the door is open during the Hold State, the user will be allowed to use the Up/Spit Jog key (Key C) to jog the spit motor by pressing Key C. • Otherwise, any other press of Key C will have no effect.
	Key D – Menu Select	• Any press of the Menu Select key (Key D) will have no effect.
	Key E – Start/Stop	• Pressing the Start/Stop key (Key E) during the Hold State will stop the count up timer and put the control back into the Idle State.
	Key F – Down/Probe Temp	• A press of the Down/Probe Temp key (Key F) will display the temperature that the probe is currently reading.

LED	LED A – Temperature	• The Temperature LED (LED A) will be continuously off during the Hold State.
	LED B – Time	• The Time LED (LED B) will be continuously off during the Hold State.
	LED C – Up/Spit Jog	• The Up/Spit Jog LED (LED C) will be continuously off during the Hold State.
	LED D – Menu Select	• The Menu Select LED will be continuously off during the Hold State.
	LED E – Start/Stop	• The Start/Stop LED will be flash continuously during the Hold State.
	LED F – Down/Probe Temp	• The Down/Probe Temp LED (LED F) will be continuously off during the Hold State.
	LED G – Heater	• LED G will be continuously on when the heater is calling for heat.
	LED H – Unused	• LED H will be continuously off.

Segment Display	<ul style="list-style-type: none"> • The segment display will alternate between ~hold and the count up time 12345. • If the door is open during the Hold State the display will read ~door.
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3.1.2.6 Parameter Select State

Input / Output	Sensor Input 1 – Oven Temp	• The Oven Temperature sensor (Sensor Input 1) will always read temperature.
	Sensor Input 2 – Probe Temp	• The Probe Temperature sensor (Sensor Input 2) will always read temperature.
	Event Input 1 – Door Switch	• The Door Switch (Event Input 1) will be sensing condition of the door.
	Output 1 – Heater	• The Heater (Output 1) will be continuously off.
	Output 2 – Spit Motor Control	• The Spit Motor Control (Output 2) will be continuously off.
	Output 4 - Fan	• The Fan (Output 4) will be continuously off.
	Output 5 – Audible Alarm	• The Audible Alarm (Output 5) will be continuously off.

Keys	Key A – Temperature	• If the current parameter is a submenu, a single press of Key A will enter the submenu. • Else, a single press of Key A will begin editing the parameter data.
	Key B – Time	• If an upper level menu exists, a single press of Key B will back out a level. • Else, a single press of Key B will exit and return to the Power-up State.
	Key C – Up/Spit Jog	• A single press of Key C will step forward through the parameters.
	Key D – Menu Select	• Any press of Key D will have no effect.
	Key E – Start/Stop	• Any press of Key E will have no effect.
	Key F – Down/Probe Temp	• A single press of Key F will step backward through the parameters.

LED	LED A – Temperature	• LED A will be used to indicate parameter selection status.
	LED B – Time	• LED B will be used to indicate parameter selection status.
	LED C – Up/Spit Jog	• LED C will be used to indicate parameter selection status.
	LED D – Menu Select	• LED D will be continuously off.
	LED E – Start/Stop	• LED E will be continuously off.
	LED F – Down/Probe Temp	• LED F will be used to indicate parameter selection status.
	LED G – Heater	• LED G will be continuously off.
	LED H – Unused	• LED H will be continuously off.

Segment Display	• If the display is a submenu, the segment display will display the submenu title. • Else, if the display is a prompt, the segment display will display the prompt title continuously alternating the programmed value.
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3.1.2.7 Parameter Edit State

Input / Output	Sensor Input 1 – Oven Temp	• The Oven Temperature sensor (Sensor Input 1) will always read temperature.
	Sensor Input 2 – Probe Temp	• The Probe Temperature sensor (Sensor Input 2) will always read temperature.
	Event Input 1 – Door Switch	• The Door Switch (Event Input 1) will be sensing condition of the door.
	Output 1 – Heater	• The Heater (Output 1) will be continuously off.
	Output 2 – Spit Motor Control	• The Spit Motor Control (Output 2) will be continuously off.
	Output 4 - Fan	• The Fan (Output 4) will be continuously off.
	Output 5 – Audible Alarm	• The Audible Alarm (Output 5) will be continuously off.

Keys	Key A – Temperature	• Any press of Key A will have no effect.
	Key B – Time	• A single press of Key B will accept the edit and return to the Parameter Select State.
	Key C – Up/Spit Jog	• A single press of Key C will increment the program data.
	Key D – Menu Select	• Any press of Key D will have no effect.
	Key E – Start/Stop	• A single press of Key E will cancel the edit and return to the Parameter Select State.
	Key F – Down/Probe Temp	• A single press of Key F will decrement the program data.

LED	LED A – Temperature	• LED A will be continuously off.
	LED B – Time	• LED B will be used to indicate parameter edit status.
	LED C – Up/Spit Jog	• LED C will be used to indicate parameter edit status.
	LED D – Menu Select	• LED D will be continuously off.
	LED E – Start/Stop	• LED E will be used to indicate parameter edit status.
	LED F – Down/Probe Temp	• LED F will be used to indicate parameter edit status.
	LED G – Heater	• LED G will be continuously off.
	LED H – Unused	• LED H will be continuously off.

Segment Display	• When the unit is in the Parameter Edit State, the segment display will display the data value being edited.
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3.1.3 Profile

3.1.3.1 Starting the Profile

To start a profile the user will select either an automatic menu by pressing the Menu Select key (Key A) and using keys C and F to scroll to desired menu or by pressing the Temperature key (Key A) and the Time key (Key B) to manually enter a menu. When the desired menu or manual information has been entered or displayed, the user will then press the Start/Stop key (Key E).

If the selected heating cycle set point has not been reached the control will go into the Preheat State. The control will then heat the cabinet to set point. When set point has been met, the control will alert the user that set point has been reached, product can now be loaded and then another press of the Start/Stop key will start the countdown timer.

If the selected heating cycle set point is met when selected, the control will go directly to Ready, alerting the user to load the product. Another press of the Start/Stop key will start the countdown timer.

3.1.3.2 Canceling the Profile

To cancel the heating cycle the user will press and hold the Start/Stop key for 3 seconds. The control will then revert back to the Idle State.

3.1.3.3 Profile Completion

Profile completion occurs when the user cancels the Hold State by pressing the Start/Stop key. Control will go back into the Idle State.

3.1.3.4 Other Considerations

There will be no Pause State. When the door is open the timer will stop counting down. The only time that the Spit Motor and the Spit Jog key (Key C) will be active is when the door is open. When the door is closed the time will continue the countdown from where it left off and the Spit Jog key will be de-activated.

Also when the door is open the heater and fan will be off. The Spit Motor will stop moving, the only way to move the Spit when the door is open is by pressing Key C.

3.1.3.5 Programming an Automatic Menu

To access the automatic menus, press the Menu Select (Key D) from the operating display. This will enter the Menu Programming Mode. Using Key C and Key F, select an automatic menu for editing and press the Temperature key (Key A) to edit the temperature for that menu, a second press will allow you to edit the hold temperature. Pressing the Time key (Key B) will allow you to edit the time for that menu. The user can start that menu by pressing the Start/Stop key (Key E) or move to another menu by pressing the Menu Select key (Key D). Each menu will allow you to change what is shown below, the customer will need only 10 menus.

Prompt	Description	Values	Visibility
Tenp1	Temperature 1	Range: 32°F to 420°F Default: 200°F	Always visible.
Htenp	Hold Temperature	Range: 32°F to 420°F Default: 150°F	Always visible.
Tin1	Time 1	Range: 0h:00m:00s to 9h:59m:55s Default: 0:02:00	Always visible.

3.1.4 Configuration Mode

3.1.4.1 Equipment Type Submenu

To access the Equipment Type Submenu, first simultaneously press and hold the Key D and Key E for 3 seconds from the operating display. This will enter the Menu Programming Mode. Next, simultaneously press and hold Key D and Key E for 3 seconds. This will enter the Configuration Mode. Using the Increment and Decrement Keys scroll to the display ETYPE and press the Edit key (Key A). The following parameters and values are in the Equipment Type Submenu.

Prompt	Description	Values	Visibility
Appl~	Application Number	Range: 1-28 Default: 20	Removed in custom.
A_Loc	Application Number Security Lock	Range: Yes, No Default: No	Removed in custom.
Sound	Audible Alarm Sound	Range: 0-5 Default: 5	Always visible.
Btine	Basket Travel Time	Range: 0-30 seconds Default: 4 seconds	Removed in custom.
Ptine	Pressure Release Time	Range: 1-120 seconds Default: 60 seconds	Removed in custom.
PrEHt	Preheat Temperature	Range: Temp. Range Low to Temp. Range High Default: 540F (282C)	Removed in custom.
idle1	Idle Temperature Number 1	Range: Temp. Range Low to Temp. Range High Default: Temp. Range Low	Removed in custom.
idle2	Idle Temperature Number 2	Range: Temp. Range Low to Temp. Range High Default: Temp. Range Low	Removed in custom.
T~0Ut	Timer Output 4	Range: Yes, No Default: No	Removed in custom.
Steps	Number of Cooking Steps	Range: 1 or 2 Default: 1	Removed in custom.
Melt	Oil Melt Cycle	Range: On, Off Default: Off	Removed in custom.
Fan~~	Fan Speed	Range: 1-speed, 2-speed Default: 1-speed	Removed in custom.
Delay	Fan Delay Time	Range: 0-120 minutes Default: 0 minutes	Removed in custom.
SetPT	Temperature Setpoint	Range: Temp. Range Low to Temp. Range High Default: 160F (71C)	Removed in custom.
Probe	Meat/Food Temperature Probe	Range: Yes, No Default: No	Removed in custom.

3.1.4.2 Setup Submenu

To access the Setup Submenu, first simultaneously press and hold Key D and the Key E for 3 seconds from the operating display. This will enter the Menu Programming Mode. Next, simultaneously press and hold Key D and Key E for 3 seconds. This will enter the Configuration Mode. Using the Increment and Decrement Keys scroll to the display SETUP and press the Edit key (Key A). The following parameters and values are in the Setup Submenu.

Prompt	Description	Values	Visibility
~C_F~	Temperature Display Format	Range: °C or °F Default: °C	Always visible.
Time	Time Display Format	Range: MMM:SS, HH:MM, H:MM:SS Default: MMM:SS	Always visible.
Chirp	Key Chirp	Range: On, Off Default: Off	Always visible.
Loc` `	Menu Security Lock	Range: Yes, No Default: No	Always visible.
Tc` ` `	Thermocouple Type	Range: J, K (shown as ~~~~H), E Default: K	Hardware has tc sensor inputs.
Rtd` `	RTD Curve	Range: DIN, JIS Default: DIN	Hardware has RTD sensor inputs.
TconP	WatCurve Temperature Compensation	Range: On, Off Default: Off	Always visible.
OfSt1	Temp. Offset, Channel 1	Range: -99 to 99°F (-55 to 55°C) Default: 0°F (0°C)	Always visible.
Ofst2	Temp. Offset, Channel 2	Range: -99 to 99°F (-55 to 55°C) Default: 0°F (0°C)	Always visible.
Tr~Lo	Temperature Range Low	Range: 0°F (-18°C) for rtd inputs, 32°F (0°C) for tc inputs Default: 0°F (-18°C) for rtd inputs, 32°F (0°C) for tc inputs	Always visible.
Tr~Hi	Temperature Range High	Range: Temp. Range Low to 1200°F (649°C) Default: 350°F (176°C)	Always visible.
Ready	Ready/Preheat Feature	Range: Yes, No Default: No	Always visible.
Rband	Ready Band	Range: 1 to 1200°F (38 to 649°C) Default: 5°F (3°C)	Always visible.
Cloc~	Real Time Clock Display	Range: Yes, No Default: No	Removed in custom.
PLOSS	Power Loss Menu Resume	Range: Yes, No Default: No	Removed in custom.
AL~~1	Alarm, Channel 1	Range: None, Dev, Proc, Both Default: None	Always visible.
AL~P1	Absolute Process Alarm, Channel 1	Range: 100 to 1200°F (38 to 649°C) Default: 850°F (454°C)	AL` ` 1 is set to Proc or Both.
AlDL1	Low Deviation Alarm, Channel 1	Range: -999 to 0°F (-555 to 0°C) Default: -999°F (-555°C)	AL` ` 1 is set to Dev or Both.
AlDH1	High Deviation Alarm, Channel 1	Range: 0 to 999°F (0 to 555°C) Default: 999°F (555°C)	AL` ` 1 is set to Dev or Both.
AL~~2	Alarm, Channel 2	Range: None, Dev, Proc, Both Default: None	Always visible.
AL~P2	Absolute Process Alarm, Channel 2	Range: 100 to 1200°F (38 to 649°C) Default: 1200°F (649°C)	Always visible.
AlDL2	Low Deviation Alarm, Channel 2	Range: -999 to 0°F (-555 to 0°C) Default: -999°F (-555°C)	Always visible.
AlDH2	High Deviation Alarm, Channel 2	Range: 0 to 999°F (0 to 555°C) Default: 999°F (555°C)	Always visible.

3.1.4.3 Thermal Submenu

To access the Thermal Submenu, first simultaneously press and hold Key D and Key E for 3 seconds from the operating display. This will enter the Menu Programming Mode. Next, simultaneously press and hold Key D and Key E for 3 seconds. This will enter the Configuration Mode. Using the Increment and Decrement Keys scroll to the display `tHERL` and press the Edit key (Key A). The following parameters and values are in the Thermal Submenu.

Prompt	Description	Values	Visibility
Type~	Temperature Control Type	Range: PID, On-Off Default: On-Off	Always visible.
Hyst1	Hysteresis 1	Range: 1 to 99°F (1 to 55°C) Default: 3°F (2°C)	Type ` is set to On-Off.
Hyst2	Hysteresis 2	Range: 1 to 99°F (1 to 55°C) Default: 3°F (2°C)	Always visible.
Pid~U	PID Units	Range: ~~~SI, ~~~US Default: ~~~SI	Type ` is set to PID.
Tune1	Auto-tuning, Channel 1	Range: ~~~on, ~~~Off Default: ~~~Off	Type ` is set to PID.
Tune2	Auto-tuning, Channel 2	Range: ~~~on, ~~~Off Default: ~~~Off	Always visible.
Prop1	Proportional Band 1	Range: 1 to 999°F (1 to 555°C) Default: 25°F (14°C)	Type ` is set to PID.
Rset1	Reset (integral) Gain 1	Range: 0.00 to 9.99 repeats/minute Default: 0.00 repeats/minute	Type ` is set to PID. Pid `U is set to US.
int~1	Integral Gain 1	Range: 0.00 to 99.99 minutes/repeat Default: 0.00 minutes/repeat	Type ` is set to PID. Pid `U is set to SI.
Rate1	Rate (derivative) Gain 1	Range: 0.00 to 9.99 minutes Default: 0.00 minutes	Type ` is set to PID. Pid `U is set to US.
Der~1	Derivative Gain 1	Range: 0.00 to 9.99 minutes Default: 0.00 minutes	Type ` is set to PID. Pid `U is set to SI.
CycL1	PID Cycle Time 1	Range: 1 to 60 seconds Default: 5 seconds	Type ` is set to PID.
Prop2	Proportional Band 2	Range: 1 to 999°F (1 to 555°C) Default: 25°F (14°C)	Always visible.
Rset2	Reset (integral) Gain 2	Range: 0.00 to 9.99 repeats/minute Default: 0.00 repeats/minute	Always visible.
int~2	Integral Gain 2	Range: 0.00 to 99.99 minutes/repeat Default: 0.00 minutes/repeat	Always visible.
Rate2	Rate (derivative) Gain 2	Range: 0.00 to 9.99 minutes Default: 0.00 minutes	Always visible.
Der~2	Derivative Gain 2	Range: 0.00 to 9.99 minutes Default: 0.00 minutes	Always visible.
CycL2	PID Cycle Time 2	Range: 1 to 60 seconds Default: 5 seconds	Always visible.

3.1.4.4 Diagnostic Submenu

To access the Diagnostic Submenu, first simultaneously press and hold Key D and Key E for 3 seconds from the operating display. This will enter the Menu Programming Mode. Next, simultaneously press and hold Key D and Key E for 3 seconds. This will enter the Configuration Mode. Using the Increment and Decrement Keys scroll to the display ~diAg and press the Edit key (Key A). The following parameters and values are in the Diagnostics Submenu.

Prompt	Description	Values	Visibility
Date~	Date-of-Manufacture Code	Range: YYDD Default: NA	Always visible.
Ser~n	Serial Number	Range: XXXXX Default: NA	Always visible.
Part1	Part Number – first four digits	Range: F2XX-XXXX-XXXX Default: NA	Always visible.
Part2	Part Number – middle four digits	Range: F2XX-XXXX-XXXX Default: NA	Always visible.
Part3	Part Number – last four digits	Range: F2XX-XXXX-XXXX Default: NA	Always visible.
S~rEU	Software Revision Number	Range: XX Default: NA	Always visible.
App1~	Current Application Number	Range: XX Default: NA	Always visible.
*o*oo	Display Test	Range: All spot LEDs and all main display LEDs will light up Default: NA	Always visible.
OutPt	Output Test	Range: 0=All outputs are normal 1=Output 1 is on. All others are off. 2=Output 2 is on. All others are off. 3=Output 3 is on. All others are off. 4=Output 4 is on. All others are off. 5=Output 5 is on. All others are off. 6=All outputs are on. Default: NA	Always visible.
InPut	Event Input Test	Range: 0=Both Event Inputs are off. 1=Event Input 1 is on. 2=Event Input 2 is on. 3=Both Event Inputs are on Default: NA	Always visible.
TeNP1	Actual Temperature Channel 1 (w/out offset)	Range: XXXX °F/°C Default: NA	Always visible.
TeNP2	Actual Temperature Channel 2 (w/out offset)	Range: XXXX °F/°C Default: NA	Always visible.

3.1.5 Error Code Messages

Error	Probable Cause	Solution	Custom Software
Err`1	<ul style="list-style-type: none"> Controller EPROM component malfunction (checksum error). 	<ul style="list-style-type: none"> Cycle power to the controller: off-on. If Err`1 reappears on the display, return controller to factory. 	Used in custom
Err`2	<ul style="list-style-type: none"> Controller EEPROM component malfunction (checksum error). 	<ul style="list-style-type: none"> Cycle power to the controller: off-on. If Err`2 reappears on the display, return controller to factory. 	Used in custom
Err`3	<ul style="list-style-type: none"> Controller RAM memory malfunction. 	<ul style="list-style-type: none"> Cycle power to the controller: off-on. If Err`3 reappears on the display, return controller to factory. 	Used in custom
Err`4	<ul style="list-style-type: none"> Calibration error. Controller is out of calibration. 	<ul style="list-style-type: none"> Return controller to factory. 	Used in custom
Err`5	<ul style="list-style-type: none"> A/D Underflow error has occurred on channel 1. Temperature sensor for channel 1 is incompatible with controller. Temperature sensor lead wires for channel 1 are improperly terminated (lead wires are reversed). Channel 1 measures a condition below the controller temperature range. 	<ul style="list-style-type: none"> Confirm temperature sensor compatibility. Compare controller part number and specification to the chosen sensor. Refer to the controller part number on the sticker label, or view the controller part number by accessing the WatHelp Diagnostics function. For controllers requiring thermocouple sensors, confirm that the tc` parameter is set to the proper thermocouple curve. For controllers requiring RTD sensors, confirm that the rtd` parameter is set to the proper RTD curve. Refer to sensor wiring instructions. Refer to controller specifications. 	Used in custom
Err`6	<ul style="list-style-type: none"> A/D Overflow error has occurred on channel 1. Temperature sensor or circuit for channel 1 is open or damaged. Temperature sensor for channel 1 is incompatible with controller. Channel 1 measures a condition above the controller temperature range. 	<ul style="list-style-type: none"> Evaluate the condition of channel 1 sensor and circuitry. Confirm temperature sensor compatibility. Compare controller part number and specification to the chosen sensor. Refer to the controller part number on the sticker label, or view the controller part number by accessing the WatHelp Diagnostics function. For controllers requiring thermocouple sensors, confirm that the tc` parameter is set to the proper thermocouple curve. For controller requiring RTD sensors, confirm that the rtd` parameter is set to the proper RTD curve. Refer to sensor wiring instructions. Refer to controller specifications. 	Used in custom
Err`7	<ul style="list-style-type: none"> Under-range error has occurred on channel 1. Controller measures a temperature below the allowable operating range. Temperature sensor lead wires for channel 1 are improperly terminated (lead wires are reversed). Controller is misapplied. 	<ul style="list-style-type: none"> Refer to sensor wiring instructions. Refer to controller specifications. System may need to warm up. 	Used in custom
Err`8	<ul style="list-style-type: none"> Over-range error has occurred on channel 1. Controller measures a temperature above the allowable operating range. Temperature sensor lead wires for channel 1 are improperly terminated (lead wires are reversed). Controller is misapplied. 	<ul style="list-style-type: none"> Refer to sensor wiring instructions. Refer to controller specifications. System may need to cool down. Evaluate the system high-temperature limiting device. 	Used in custom

Error	Probable Cause	Solution	Custom Software
Err9	<ul style="list-style-type: none"> • A/D Underflow error has occurred on channel 2. • Temperature sensor for channel 2 is incompatible with controller. • Temperature sensor lead wires for channel 2 are improperly terminated (lead wires are reversed). • Channel 2 measures a condition below the controller temperature range. 	<ul style="list-style-type: none"> • Confirm temperature sensor compatibility. Compare controller part number and specification to the chosen sensor. • Refer to the controller part number on the sticker label, or view the controller part number by accessing the WatHelp Diagnostics function. • For controllers requiring thermocouple sensors, confirm that the <code>tc` `</code> parameter is set to the proper thermocouple curve. • For controllers requiring RTD sensors, confirm that the <code>rtd` `</code> parameter is set to the proper RTD curve. • Refer to sensor wiring instructions. • Refer to controller specifications. 	Always visible.
Err10	<ul style="list-style-type: none"> • A/D Overflow error has occurred on channel 2. • Temperature sensor or circuit for channel 2 is open or damaged. • Temperature sensor for channel 2 is incompatible with controller. • Channel 2 measures a condition above the controller temperature range. 	<ul style="list-style-type: none"> • Evaluate the condition of channel 2 sensor and circuitry. • Confirm temperature sensor compatibility. Compare controller part number and specification to the chosen sensor. • Refer to the controller part number on the sticker label, or view the controller part number by accessing the WatHelp Diagnostics function. • For controllers requiring thermocouple sensors, confirm that the <code>tc` `</code> parameter is set to the proper thermocouple curve. • For controller requiring RTD sensors, confirm that the <code>rtd` `</code> parameter is set to the proper RTD curve. • Refer to sensor wiring instructions. • Refer to controller specifications. 	Always visible.
Err11	<ul style="list-style-type: none"> • Under-range error has occurred on channel 2. • Controller measures a temperature below the allowable operating range. • Temperature sensor lead wires for channel 2 are improperly terminated (lead wires are reversed). • Controller is misapplied. 	<ul style="list-style-type: none"> • Refer to sensor wiring instructions. • Refer to controller specifications. • System may need to warm up. 	Always visible.
Err12	<ul style="list-style-type: none"> • Over-range error has occurred on channel 2. • Controller measures a temperature above the allowable operating range. • Temperature sensor lead wires for channel 2 are improperly terminated (lead wires are reversed). • Controller is misapplied. 	<ul style="list-style-type: none"> • Refer to sensor wiring instructions. • Refer to controller specifications. • System may need to cool down. • Evaluate the system high-temperature limiting device. 	Always visible.
Err13	<ul style="list-style-type: none"> • Ambient temperature surrounding the controller is too high or too low. 	<ul style="list-style-type: none"> • Adjust the system or environment such that the ambient air surrounding the control is above 0C and below 80C. • Refer to controller specifications. 	Used in custom
Err14	<ul style="list-style-type: none"> • Real-time clock error prohibits the time of day to appear on the display. 	<ul style="list-style-type: none"> • If the application does not require the Power Loss Menu Resume feature, then this error is a non-critical error. The controller will operate normally, with the exception of no longer displaying the time of day. To correct the error, return controller to the factory. • If the application requires displaying the time of day, or if the application requires the Power Loss Menu Resume feature, then this error is a critical error. Return the controller to the factory. 	Removed in custom

3.1.6 Alarm Messages

Error	Probable Cause	Solution	Custom Software
Proc1	<ul style="list-style-type: none"> • Absolute Process Alarm for channel 1 has occurred. • Channel 1 temperature sensor measures a value that exceeds the maximum allowable temperature defined by the program. • System equipment failure. 	<ul style="list-style-type: none"> • Determine if an Absolute Process Alarm is required for channel 1. If not, access the Al` ` 1 parameter and set the value to disable the process alarm, choosing `none or ``deu. Refer to the programming guide. • If an Absolute Process Alarm for channel 1 is required, confirm that the Al` P1 parameter is set to the proper value for the application. • Evaluate the system high-temperature limiting device. • The Offset parameter can affect the alarm point. Confirm that the Ofst1 parameter is set properly. • System may require service. 	Used in custom
Proc2	<ul style="list-style-type: none"> • Absolute Process Alarm for channel 2 has occurred. • Channel 2 temperature sensor measures a value that exceeds the maximum allowable temperature defined by the program. • System equipment failure. 	<ul style="list-style-type: none"> • Determine if an Absolute Process Alarm is required for channel 2. If not, access the Al` ` 2 parameter and set the value to disable the process alarm, choosing `none or ``deu. Refer to the programming guide. • If an Absolute Process Alarm for channel 2 is required, confirm that the Al` P2 parameter is set to the proper value for the application. • Evaluate the system high-temperature limiting device. • The Offset parameter can affect the alarm point. Confirm that the Ofst2 parameter is set properly. • System may require service. 	Used in custom

Error	Probable Cause	Solution	Custom Software
`Hi`1	<ul style="list-style-type: none"> • Deviation Alarm indicating high temperature conditions for channel 1. • Channel 1 sensor measures a high temperature that exceeds the allowable deviation above the programmed setpoint. 	<ul style="list-style-type: none"> • Determine if a High or Low Deviation Alarm is required for channel 1. If neither are required, access the AL`1 parameter and set the value to disable the deviation alarms, choosing `none or `Proc. Refer to the programming guide. • If a Deviation Alarm for channel 1 is required, confirm that the ALdH1 parameter is set to the proper value for the application. • The Offset parameter can affect the alarm point. Confirm that the Ofst1 parameter is set properly. • System may require service. 	Used in custom
`Hi`2	<ul style="list-style-type: none"> • Deviation Alarm indicating high temperature conditions for channel 2. • Channel 2 sensor measures a high temperature that exceeds the allowable deviation above the programmed setpoint. 	<ul style="list-style-type: none"> • Determine if a High or Low Deviation Alarm is required for channel 2. If neither are required, access the AL`2 parameter and set the value to disable the deviation alarms, choosing `none or `Proc. Refer to the programming guide. • If a Deviation Alarm for channel 2 is required, confirm that the ALdH2 parameter is set to the proper value for the application. • The Offset parameter can affect the alarm point. Confirm that the Ofst2 parameter is set properly. • System may require service. 	Used in custom
`LO`1	<ul style="list-style-type: none"> • Deviation Alarm indicating low temperature conditions for channel 1. • Channel 1 sensor measures a low temperature that exceeds the allowable deviation below the programmed setpoint. 	<ul style="list-style-type: none"> • Determine if a High or Low Deviation Alarm is required for channel 1. If neither are required, access the AL`1 parameter and set the value to disable the deviation alarms, choosing `none or `Proc. Refer to the programming guide. • If a Deviation Alarm for channel 1 is required, confirm that the ALdL1 parameter is set to the proper value for the application. • The Offset parameter can affect the alarm point. Confirm that the Ofst1 parameter is set properly. • System may require service. 	Used in custom
`LO`2	<ul style="list-style-type: none"> • Deviation Alarm indicating low temperature conditions for channel 2. • Channel 2 sensor measures a low temperature that exceeds the allowable deviation below the programmed setpoint. 	<ul style="list-style-type: none"> • Determine if a High or Low Deviation Alarm is required for channel 2. If neither are required, access the AL`2 parameter and set the value to disable the deviation alarms, choosing `none or `Proc. Refer to the programming guide. • If a Deviation Alarm for channel 2 is required, confirm that the ALdL2 parameter is set to the proper value for the application. • The Offset parameter can affect the alarm point. Confirm that the Ofst2 parameter is set properly. • System may require service. 	Used in custom