

# Athena<sup>®</sup> Bedros<sup>™</sup> Hot Runner Controller Configuration and Operation Manual



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# Precautions

## Warning

Use of this equipment in a manner not specified by the manufacturer may impair protection provided by the equipment.



In addition to presenting a potential fire hazard, high voltage and high temperature can damage equipment and cause severe injury or death. When installing or using this instrument, follow all instructions carefully and use approved safety controls.



Hazardous potentials exist on components inside the controller. Always disconnect AC power to the controller when servicing the controller.

Because these temperature controls or associated equipment may not always fail safe, an approved temperature and/or pressure safety control should be used for safe operation.

Turn off power to the controller before cleaning the exterior of the controller.

Failure to observe these precautions can result in exposure to a potentially lethal shock hazard.

All wiring should be done by an experienced technician. The controller and wiring should be installed in accordance with national and local electrical codes. To avoid serious personal injury and damage to equipment, follow all warnings and cautions provided in the hardware setup instructions.

## Caution

If a controller shows signs of having been damaged during shipping, do not power up or install the controller. Save all packing materials and report any damage to the carrier immediately.



Do not locate this instrument where it may be subjected to excessive shock, vibration, dirt, moisture, oil, or other liquids.

This is a Class A product. In domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Specified operating ambient temperature is 32 to 122 °F (0 to 50 °C).

# Table of Contents

Precautions.....	i
Table of Contents.....	i
<b>1. Introduction .....</b>	<b>1</b>
1.1 About this Manual .....	1
1.2 Features and Benefits of Bedros Controllers.....	1
1.3 Model Number Breakdown .....	4
1.4 What Happens When You Power Up the Controller.....	4
<b>2. Setup Sequence .....</b>	<b>5</b>
<b>3. User Interface .....</b>	<b>7</b>
3.1 Touch Screen.....	7
3.2 Keypad.....	11
<b>4. Alarms and Alarm Indication .....</b>	<b>12</b>
4.1 Types of Alarms .....	12
4.2 Alarm Indication .....	12
4.3 Silencing Alarm Beep.....	12
4.4 External Indication .....	12
4.5 Alarm Priorities.....	13
<b>5. Changing the Mode and Manual Mode Output Percent.....</b>	<b>14</b>
<b>6. Changing the Setpoint.....</b>	<b>15</b>
<b>7. Setting Up Groups .....</b>	<b>16</b>
7.1 Introduction .....	16
7.2 Procedure.....	16
<b>8. Setting Up Master and Slave Zones .....</b>	<b>19</b>
8.1 Introduction .....	19
8.2 Procedure.....	19
<b>9. Factory Settings .....</b>	<b>22</b>
<b>10. Changing Parameter Values .....</b>	<b>24</b>
<b>11. Parameter Characteristics.....</b>	<b>26</b>
11.1 Introduction .....	26
11.2 Display Units.....	26
11.3 Supervisor Parameters.....	28
11.4 Input Parameters .....	30
11.5 Control Parameters .....	31
11.6 Alarm Parameters.....	33
11.7 Boost Parameters.....	35

<b>12. Tuning the Controller for PID Control .....</b>	<b>36</b>
12.1 Introduction .....	36
12.2 Procedure for Autotuning.....	36
12.3 Autotune Errors .....	38
12.4 Manual Tuning (Zeigler-Nichols PID Method) .....	38
<b>13. Restricting Access to Controller Functions .....</b>	<b>40</b>
13.1 Introduction .....	40
13.2 Procedure .....	40
<b>14. Resetting Parameters to the Default Values.....</b>	<b>42</b>
14.1 Introduction .....	42
14.2 Procedure .....	42
<b>15. Loading and Storing Parameter Values .....</b>	<b>43</b>
15.1 Introduction .....	43
15.2 Storing Procedure.....	43
15.3 Loading Procedure .....	44
<b>16. Viewing Software Versions .....</b>	<b>47</b>
16.1 Introduction .....	47
16.2 Procedure .....	47
<b>17. Index.....</b>	<b>49</b>
<b>Warranty.....</b>	<b>52</b>

# 1. Introduction

## 1.1 About this Manual

This manual contains all the information needed to configure and operate the Bedros Hot Runner controllers.

Wiring diagrams, mounting instructions, and other information about installing the hardware are on the installation diagrams shipped with the unit.

## 1.2 Features and Benefits of Bedros Controllers

### 1.2.1 Multi-Zone Control with Convenient User Interface

A single Bedros Hot Runner controller can provide multiprocessor-based control of up to 32 zones.<sup>1</sup> Zones can be configured individually or in configurable groups.

A touch screen provides an overview of the process value, setpoint, output percent, and mode of every zone. Alarm states are also signaled on this display.

This same touch screen provides a convenient interface for changing setpoints and setup parameters. Keys on the front of the case let you put all zones in Run or Idle state, temporarily silence audible alarms, and select zones. (When necessary, access to function keys on the touch screen can be restricted. See Section 13 for details.)

### 1.2.2 PID Control with Autotuning

When a Bedros zone is in Normal (closed loop) mode, Proportional-Integral-Derivative (PID) control is provided. The Bedros Hot Runner controllers also support Manual (open loop) mode that overrides automatic control. In Manual mode you control the output by entering a fixed output percentage value.<sup>2</sup> A zone's transfer from PID to manual is "bumpless" when the process value is within 9 °F (5 °C) of the setpoint.

Using PID control, the controller modulates output power by adjusting the output power percentage within a configurable proportional band. Power is proportionally reduced as the process temperature gets closer to the setpoint temperature.

The configurable derivative action affects the output based on the rate of change of the process value.

The integral action affects the output based on the duration of the process value's variation from the setpoint. In the Bedros Hot Runner controllers, the integral (reset) action is always equal to six times the configured derivative (rate) action.

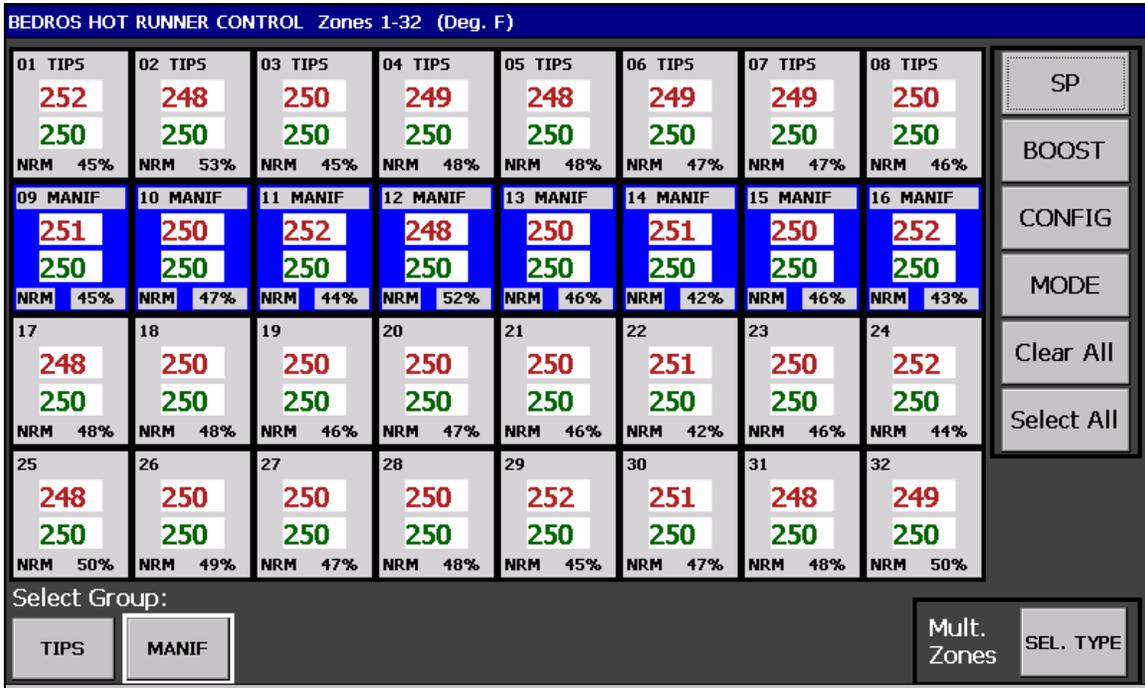
An Autotune function is standard on every Bedros Hot Runner controller. This feature for easy tuning of the proportional and derivative components of the control algorithm can be

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<sup>1</sup> Units that support more than 32 zones are available; contact the factory.

<sup>2</sup> Use of a fixed output percentage is also possible under other circumstances. Configuration parameters let you specify a fixed output to be used as a failsafe action, a different fixed output percentage to be used in standby mode, and another fixed output percentage used during the boost function described in 1.2.4.

initiated every time the controller is powered up, once when the controller is set up regardless of success (and again by changing a parameter value), once only if successful (repeated at each power up until successful), or never. Instructions for tuning the controller automatically and manually are in Section 12.



**Touch Screen Main Display**

**1.2.3 CompuStep® Soft Start for Heater Bake Out**

All Bedros Hot Runner controllers support the CompuStep soft start feature, which allows slow dissipation of moisture in heaters by gradually applying soft power to the heaters. Using this feature helps extend the life of the heaters and the molds. When a soft start is executed, single cycle bursts start at 5% output power and step up the output 5% every 30 seconds.

- The soft start when the controller is in Normal (automatic) mode lasts five minutes or until the process temperature reaches 200 °F (93 °C).
- The soft start when the controller is in Manual mode continues until the output is the lower of 50% or the target manual mode output percent.

By default, a soft start will be executed:

- every time the controller starts (after being taken out of Idle) and the process value is less than 200 °F (93 °C), and
- every time the controller is returned to normal (automatic) operation and the PV is less than 200°F (93 °C).

### **1.2.4 Programmable Boost Function**

Every Bedros Hot Runner controller supports a boost function. You can use the Boost Parameters screen to configure a special setpoint (closed loop boost) or a special fixed output percentage (open-loop boost) to be used when the zone is selected and the **BOOST** button is pressed.

The boost function will remain active until:

- the configured boost duration time has expired, or
- the operator uses the Mode screen to take the zone out of boost mode before the expiration of the boost duration.

### **1.2.5 Process Protection Features**

Process protection features are standard on all Bedros controllers. These features include:

- high and low deviation alarms
- high temperature safety limit
- loop break detection
- failsafe operation in case of sensor problems
- ground fault detection

### **1.2.6 Slave Zones**

If you have specified a master zone for a control zone and a loop break or open thermocouple is detected for the zone, the affected zone (the “slave” zone) will flash yellow and use its master zone’s output percent. See Section 8 for details.

### **1.2.7 Ease of Configuration**

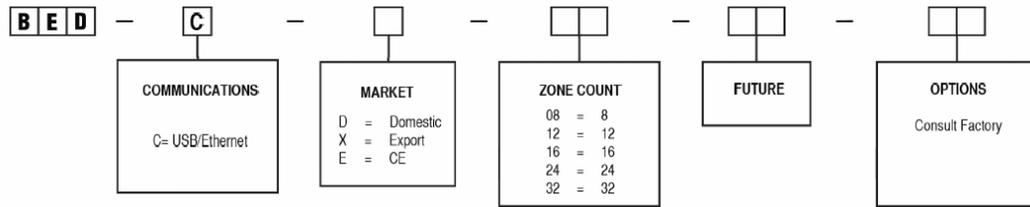
The touch screen makes configuration easy. Zones can be configured individually or in groups.

Sets of parameter values can be saved in named sets in the controller or on a removable USB device. These sets of parameter values can be reloaded to the same controller or to a different Bedros controller.

### **1.2.8 Security**

The Bedros main display includes function buttons that can be used to change the selected zones’ setpoint and mode, and to boost the output temporarily by a configurable amount. Users who know the Supervisor password can limit access to any or all of the on-screen function buttons, plus limit configuration access. (Units are shipped with password protection disabled.)

### 1.3 Model Number Breakdown



Additional zones counts are available; consult factory.

Consult factory for connector plate layout.

The input type is indicated by the last "Option" character.

### 1.4 What Happens When You Power Up the Controller

When a Bedros Hot Runner controller is powered up, the LED above the keypad is amber, software versions (of the display unit and the controller hardware) are displayed.

At the conclusion of the startup process, the main screen shown in 3.1.1 is displayed.

All zone outputs will be off because the unit starts up with all zones in the Idle state.

The Run/Idle key on the front of the case is used to put all zones that are currently Idle in the Run state. When at least one zone is not in the Idle state, the lit LED above the Run/Idle key is green.

When zones go into the Run state, the effect on each zone's output depends on the value of the Startup Mode parameter configured using the Control Parameters screen. See 11.5 for details.

## 2. Setup Sequence

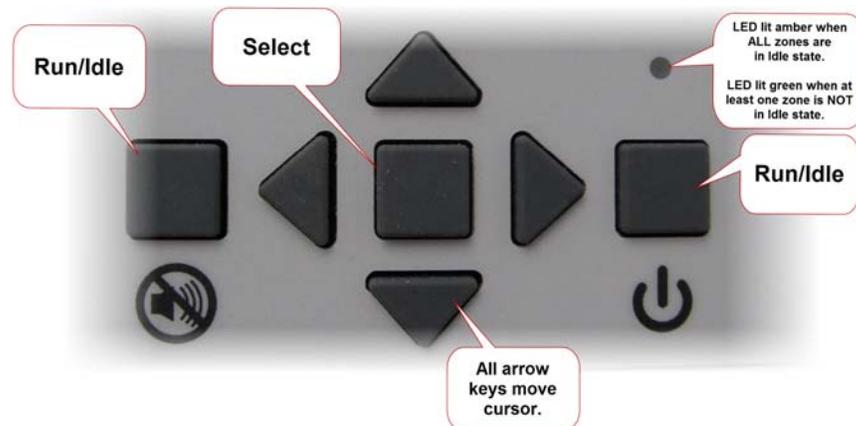
The following list summarizes the configuration and startup tasks to be accomplished once the controllers are mounted and wired as shown on the diagrams shipped with the unit.

Information about all configuration parameters, including parameter interactions and valid ranges, is in Section 11.

- 1) Turn on the controller using the switch on the back (shown below). When the unit is powered up, the controller goes through its startup sequence, and then the main screen (see 3.1.1) will be displayed. **All zones will be Idle (all outputs off).**



If the controller has already been wired to the sensors and heaters, do NOT push the Run/Idle key on the front of the case until after you have configured the zones and entered custom setpoints. **When zones are taken out of Idle, their outputs may go on unless you change the default parameter values.**



**If the LED above the Run/Idle key is lit green, at least one zone is not in the Idle state.**

- 2) Take unneeded zones out of service by setting them to Off Line using the Mode screen; see Section 5.
- 3) Look at the top of the main screen to see the units of measure for the process values and setpoints displayed. Units ordered for the “Domestic Market” (“D” as fifth character in the model number on the tag to the left of the power connection on the back of the controller) are set to display temperatures in Fahrenheit. Units ordered for “Export” (“X” as fifth character in model number) or “CE” (“CE” as fifth and sixth characters in model number) are set to display temperatures in Celsius.

If you want to change the unit of measure used for temperature displays, tap a zone to select it so you can access the Configuration screen (by tapping **Config**),

and then tap **Display Units**, pick **Deg. F** or **Deg. C**, and then tap **Save**. The selected unit of measure will be used to display temperatures for all zones. Setpoints and other temperature values previously entered while a different unit of measure was in use will be converted automatically.

- 4) Set up groups (if needed); see Section 7.
- 5) If the factory settings listed in Section 9 are not appropriate for your application, pick a group (or one or more zones on the main screen) and change parameter values; see Section 10.



Note that the default High [Temperature] Safety Limit (a Supervisor parameter) is 32 degrees F (0 degrees C), **which turns off the feature**. If you want the controller to turn off the output to a zone that exceeds the high limit, change the value of the High Safety Limit.

- 6) Bedros units are shipped with the Supervisor password set to 100, which disables password protection. If you want to limit access to the Supervisor screen, change the Supervisor password from the default 100; see Section 10 for the procedure for changing a parameter value. As long as the password is 100, no password will be required to access all functions (except settings on the Factory Configuration screen).<sup>3</sup>
- 7) Enter setpoints for the zones that will operate in Normal (closed loop) mode (see Section 6) and output percents for the zones that will operate in Manual (open loop) mode (see Section 5 or 6).
- 8) Autotune all zones that will operate in Normal (closed loop) mode; see Section 12. When Autotuning has been completed successfully for all Normal zones, the controller is ready to use.
- 9) Press the Run/Idle key below the screen. All zones that are currently Idle will go to their configured startup mode. The LED above the button will be lit green whenever at least one zone is not in the Idle state.

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<sup>3</sup> The Factory Configuration password is available only from Athena Technical Support.

## 3. User Interface

### 3.1 Touch Screen

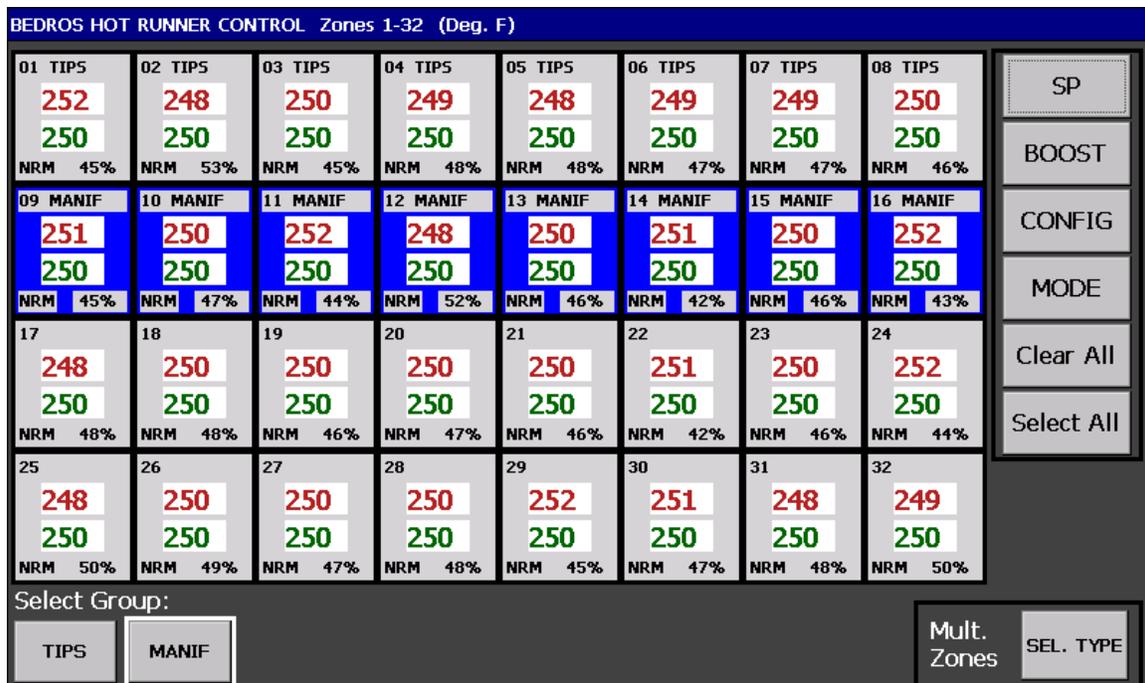
#### 3.1.1 Main Display

The main display on the touch screen displays a “faceplate” for every zone (8, 16, 24, or 32 zones, depending on the model), mimicking the displays of controllers mounted in a mainframe. In the illustration below, zones 9 through 16 are blue because they are selected.

**A zone that is flashing red is in alarm** (see Section 4).

**A zone that is flashing yellow has a problem that does not affect operation now.** For example, a zone flashes yellow if an open thermocouple is detected, but the zone is operating in Manual mode (in which no sensor value is used by the controller to calculate the output).

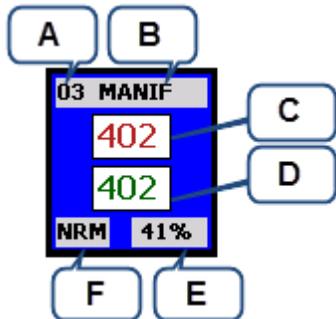
Any action taken using the **SP** (setpoint), **BOOST**, **CONFIG** (configuration), or **MODE** button will affect all selected zones.<sup>4</sup>



<sup>4</sup> The Supervisor Parameters screen provides access to a function that can be used to limit access to buttons on the Configuration screen, and/or to disable the **SP**, **BOOST**, and/or **MODE** buttons. If on-screen buttons are disabled, talk to your Bedros administrator.

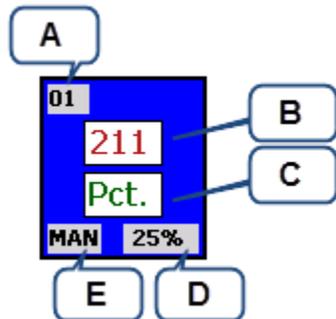
### 3.1.2 Information about Each Zone

The zone below is selected (blue background) and in Normal (closed loop) mode. It is a member of a group.



- A: zone number (automatically assigned)
- B: configurable group name (if any)
- C: process value in degrees F or C; see top of screen for unit of measure
- D: Normal mode setpoint in degrees F or C, or alarm code (see Section 4)
- E: output percent in use
- F: operating mode (see 3.1.3 for list of modes)

The zone below is selected and in Manual (open loop) mode. It is not a member of a group.



- A: zone number (automatically assigned)
- B: process value in degrees F or C; see top of screen for unit of measure
- C: "Pct" indicates that the zone is in Manual mode (or other open loop mode, such as open loop boost) and using a configurable fixed output percent (item D); an alarm code may be displayed (see Section 4)
- D: output percent in use
- E: operating mode (see 3.1.3 for list of modes)

### 3.1.3 Modes of Operation

In the lower left corner of a zone's "faceplate" the mode of operation is displayed. The modes are:

HSB = hardware standby (external signal put whole controller on standby)

NRM = normal (closed loop)

NTU = normal tuning (Autotuning in process)

NSS = normal soft start—Gradual warming if the process value is less than the lower of the setpoint or 200 degrees F (93 degrees C).

NRB = normal mode boost (using configured boost setpoint)

MAN = manual (open loop)

MAB = manual mode boost (using configured boost percentage)

SBY = standby (using configured standby setpoint in Normal mode or fixed output percent in Manual mode)

SSS = standby soft start—If zone is set to start up in Standby, it will gradually warm to the standby setpoint if process value is less than the lower of the Standby setpoint or 200 degrees F (93 degrees C).

IDL = idle (no output)

Snn = slave mode; output is following output of zone *nn*

FSF = failsafe (in state configured using Supervisor screen)

OFF = off-line (unused zone)—Off-line zones can be hidden using a Supervisor parameter.

### 3.1.4 Selecting Zones

#### 3.1.4.1 Overview

A selected zone is displayed with a blue background (as shown in 2.2). Any action taken using the **SP** (setpoint), **BOOST**, **CONFIG** (configuration), or **MODE** button will affect all selected zones.

You can select and change values for:

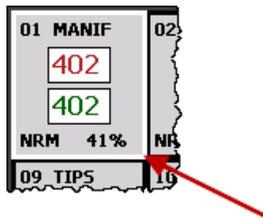
- one zone at a time; see 3.1.4.2
- more than one zone simultaneously; see 3.1.4.3
- a preconfigured group of zones (all manifolds or tips, for example); see 3.1.4.4
- all zones (except zones set to OFF); see 3.1.5

Use the **Sel. Type** (selection type) button in the lower right corner of the main screen to switch between single-zone and multi-zone selection.

#### 3.1.4.2 Single-Zone Selection

To select one zone, you can:

- tap the zone on the main display (tap again to deselect it).
- or–
- press the arrow keys on the keypad below the screen to move the cursor (white border; see below) to the desired zone, and then press the square enter key in the center of the arrow keys. (See 3.2 for more information about keypad use.)



#### 3.1.4.3 Multi-Zone Selection

To select more than one zone, tap the zones you want to select.

Tapping a zone a second time deselects it.

#### 3.1.4.4 Group Selection

If groups have been set up as described in Section 7, a button for each group will be on the main display. Tap a group's button to select all the zones in a group.

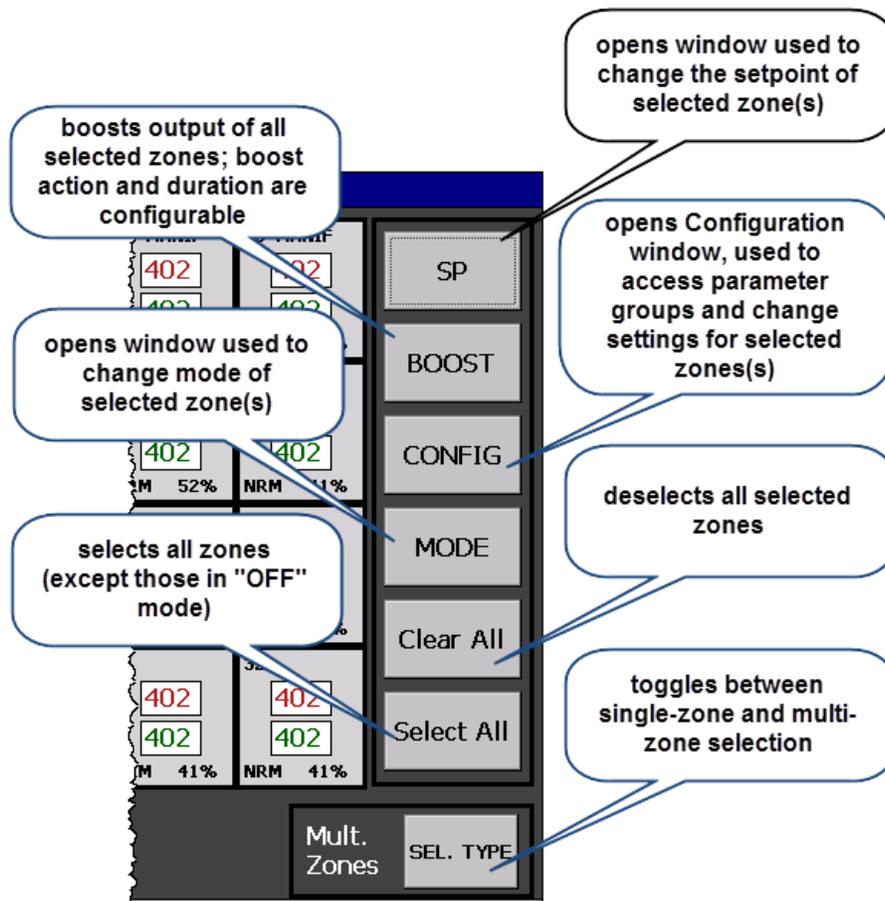


You can also use the keypad to select a group. Notice the cursor (white border) around the **MANIF** button in the picture above. Pressing the selection key (square key in the middle of the arrow keys) when the group is selected (white border around on-screen button) will select all zones in the group.

### 3.1.5 Standard On-Screen Buttons

In addition to custom buttons for configured groups (optional), standard buttons are displayed on the main screen.

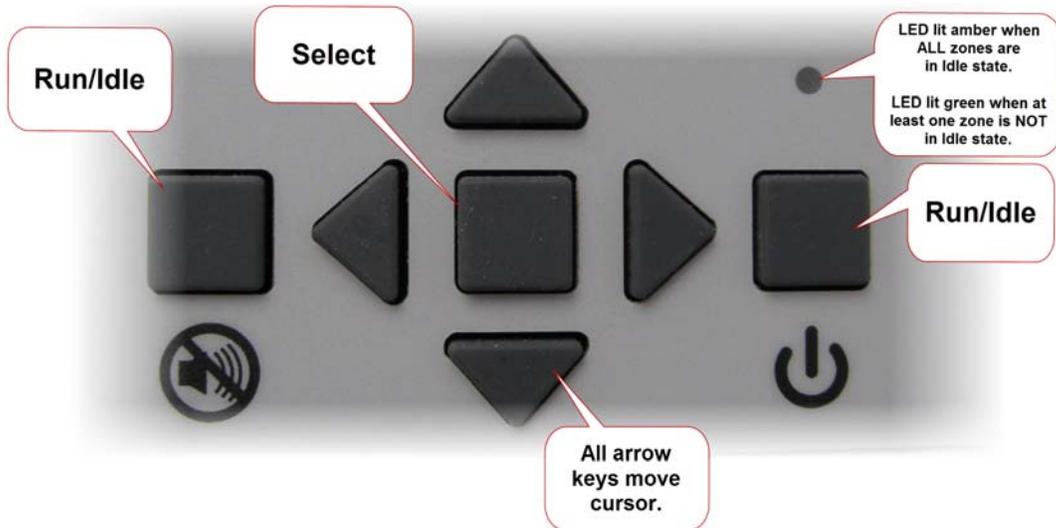
Any action taken using the **SP** (setpoint), **BOOST**, **CONFIG** (configuration), or **MODE** button will affect all selected zones.<sup>5</sup>



<sup>5</sup> The Supervisor Parameters screen provides access to a function that can be used to limit access to buttons on the Configuration screen, and/or to disable the **SP**, **BOOST**, and/or **MODE** buttons. If on-screen buttons do not work, talk to your Bedros administrator.

### 3.2 Keypad

The keypad contains arrow keys and a square selection key you can use to pick a zone or a button on the main display. The arrow keys move the white rectangular cursor shown in 2.4.4.



The keypad also contains a Run/Idle key (on the right) used to toggle between running (in most recent previous mode) and Idle state. This key affects ALL zones, not selected zones only.

To put all Idle zones in their configured startup state, press the Run/Idle key briefly. (Startup state is configured using the Control Parameters screen. A zone's startup state can be Idle; see 11.5.)

To change all zones from running to Idle, press the Run/Idle key **for at least two seconds**.

The alarm silence key (on the left) temporarily silences the alarm beep. For more information about silencing alarms, see Section 4.

## 4. Alarms and Alarm Indication

### 4.1 Types of Alarms

The Bedros Hot Runner controller supports high and low deviation alarms, configurable separately for each zone (see 11.6). The unit also recognizes process problems (such as loop break, reversed and open sensors, and process temperature exceeding configured safety limit) and problems with its own operation.

### 4.2 Alarm Indication

When a zone is in alarm:

- its background flashes red;
- a code for the type of alarm alternates with display of the setpoint (Normal mode) or “Pct” (Manual mode or other open-loop mode such as open-loop Standby); and
- unit beeps until the alarm condition is cleared or the zone is put in Idle mode.

**A zone that is flashing yellow has a problem that does not affect operation now.** For example, a zone flashes yellow if an open thermocouple is detected, but the zone is operating in Manual mode (in which no sensor value is used by the controller to calculate the output).

### 4.3 Silencing Alarm Beep

You can temporarily silence the alarm beep by pressing the Alarm Silence key on the



display. The key is labeled

Beeping will be silenced for the configured number of seconds. (The default is 120 seconds.) While audible alarm annunciation is silenced, the main display shows the “silenced alarms” icon shown below.



### 4.4 External Indication

Outputs on the back of the controller allow external devices (such as horns or lights) to be connected to the controller for alarm annunciation. For more information about this feature, see the diagrams shipped with the controller.

One of the alarm outputs is not affected when the alarm silence key on the front of the controller is pressed. Refer to the alarm output pinout diagram shipped with the controller to correctly connect a device that should or should not be turned off (temporarily) when the Alarm Silence key on the front of the case is pressed.

## 4.5 Alarm Priorities

If a zone has more than one alarm condition, the code for the highest-priority alarm is displayed. Alarm priorities are in the table below.

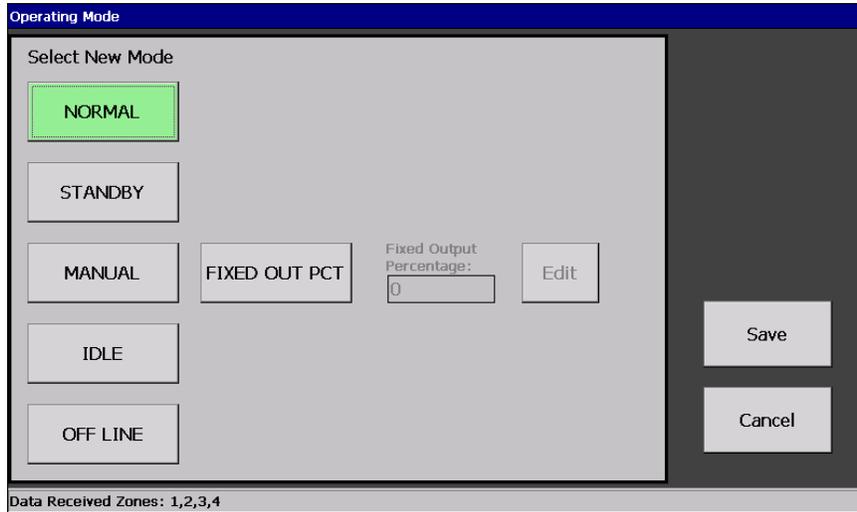
**Alarm Display Priorities**

Priority	Code	Condition	Controller Response	How Alarm Is Cleared
1	ER1 or ER2	problem with controller's internal operation	all outputs off	cycle power to controller; if error recurs, contact technical support
2	TCr	reversed thermocouple detected	zone goes to configured failsafe state	use <b>MODE</b> button to access Mode screen, put zone in Idle, and then after problem is fixed, put zone in Normal (closed loop) or Manual (open loop) mode
3	SAF	high-temperature safety limit exceeded (configured on Supervisor Parameters screen; default is feature disabled)	zone output off	
4	GFI	hard ground fault detected	zone output off	
5	TCo	open thermocouple detected	zone goes to configured failsafe state	
6	LPB	loop break detected	zone output off	
7	gfi	soft ground fault detected	soft start	
8	HID	high deviation alarm	zone output off	clears automatically when alarm condition clears
9	LOD	low deviation alarm	zone output on	
10	Tu3 Tu5 Tu8 Tu9 Tun	Autotuning error	zone output off	use <b>MODE</b> button to access Mode screen, put zone in Idle, and then after problem is fixed, try tuning again  For more information about tuning and Autotuning errors, see Section 12

## 5. Changing the Mode and Manual Mode Output Percent

To change the mode of the selected zones(s):

- 1) Tap the **MODE** button. The Operating Mode screen will be displayed.<sup>6</sup> The current mode of the selected zone with the lowest zone number will be displayed. (All selected zones are identified at the bottom of the screen.)



- 2) Tap the desired mode. If selecting **Manual**, then also tap **Fixed Out Pct** and **Edit**. The Enter Fixed Output Percentage window will open. (All windows used to change numerical values have the same functionality; see the example in the next section.)
- 3) Clear the old value, enter the new value, and then tap **Enter** to save the value and close the pop-up window.
- 4) On the Operating Mode screen, tap **Save**. The selected zone(s) will go to the selected mode. The mode code in the lower left corner of the zone “faceplate” on the main display will change to the new mode’s code. (See list in 3.1.3.)



**If you change a zone’s mode to Off Line, the controller’s processor will ignore the zone (outputs always off).** A Bedros zone set to Off Line is equivalent to an empty slot in a mainframe of traditional Hot Runner controllers.<sup>7</sup>

To stop soft start (not recommended), select the zone(s) and use the screen above to put them in Normal mode.

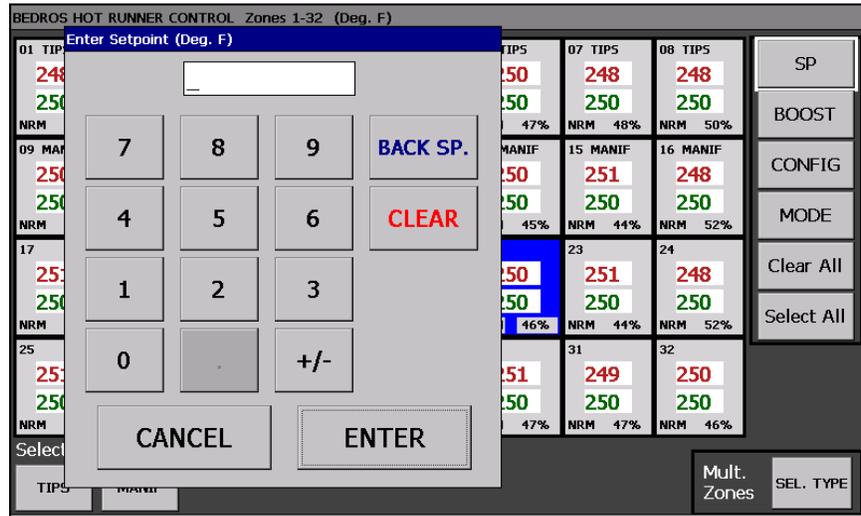
<sup>6</sup> The Supervisor Parameters screen provides access to a function that can be used to disable the **SP**, **Boost**, and/or **Mode** buttons. If these buttons do not work, talk to your Bedros administrator.

<sup>7</sup> Depending on a Supervisor parameter setting, zones set to Off Line may not be included in the main display. (The default is to display all zones, including off-line zones.)

## 6. Changing the Setpoint

To change the setpoint (temperature for closed loop or fixed output percentage for open loop) of the selected zones:

- 1) Tap the **SP** button. The Enter Setpoint window (or Enter Fixed Output Percentage window) will be displayed.<sup>8</sup>



- 2) Tap the desired value. If you make a mistake, tap **Back SP.** [back space] to erase one number or **Clear** to erase all numbers.
- 3) Tap **Enter**. The Enter Setpoint window (or Enter Fixed Output Percentage window) will close, and the new setpoint will be displayed and used for the selected zones(s).

**Tip:** The **SP** button is designed to be used to change the setpoint of zones that are all closed loop or all open loop. If you tap **SP** when a mix of open loop and closed loop zones is selected, you will get an error message.

You will also get an error message if you try to use the **SP** button in one of the following cases:

- when at least one selected zone is in a standby mode, or
- when at least one selected zone is in a boost mode.

If you need to change the Boost Setpoint, Boost Percentage, Standby Setpoint, or Standby Percentage, use the configuration screens described in Section 11.

<sup>8</sup> The Supervisor Parameters screen provides access to a function that can be used to disable the **SP**, **Boost**, and/or **Mode** buttons. If these buttons do not work, talk to your Bedros administrator.

## 7. Setting Up Groups

### 7.1 Introduction

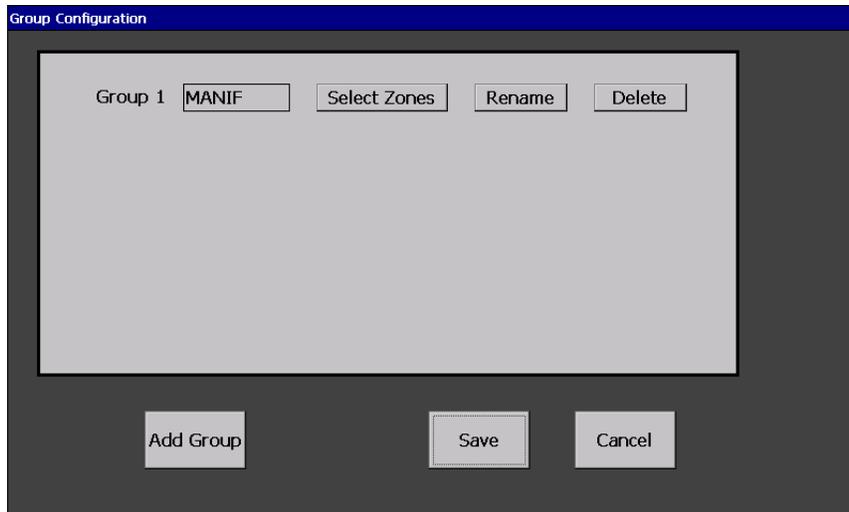
You can set up groups of zones. A button for each group will be on the main display. All zones in a group can be selected by tapping the button labeled with the name of the group.



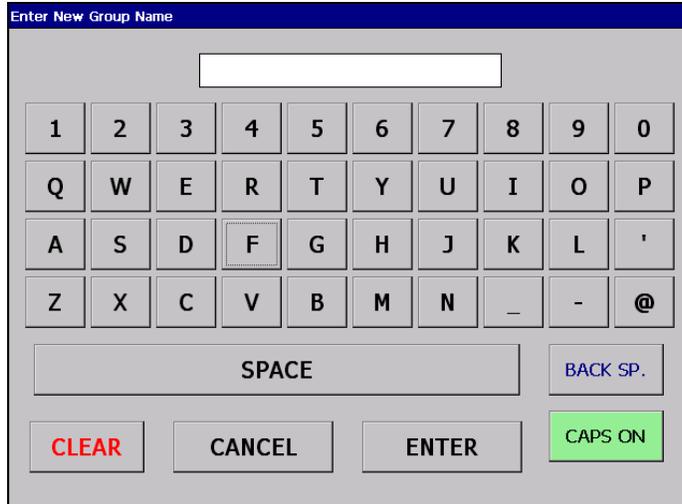
### 7.2 Procedure

To set up a group:

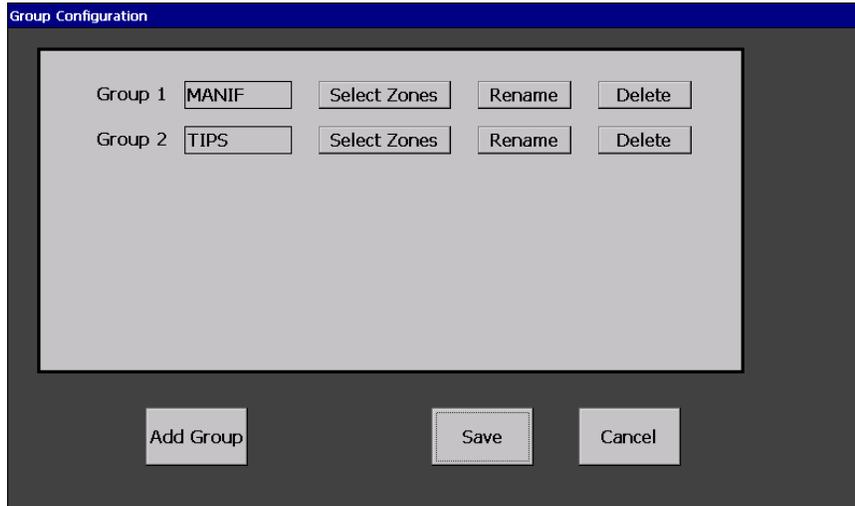
- 1) Select a zone so that you can access the Configuration screen. (This zone will not automatically be added to the group you create.)
- 2) Tap **Config**. The Configuration screen will be displayed.
- 3) Tap **Groups**. The Group Configuration screen will be displayed. Any existing groups will be listed.



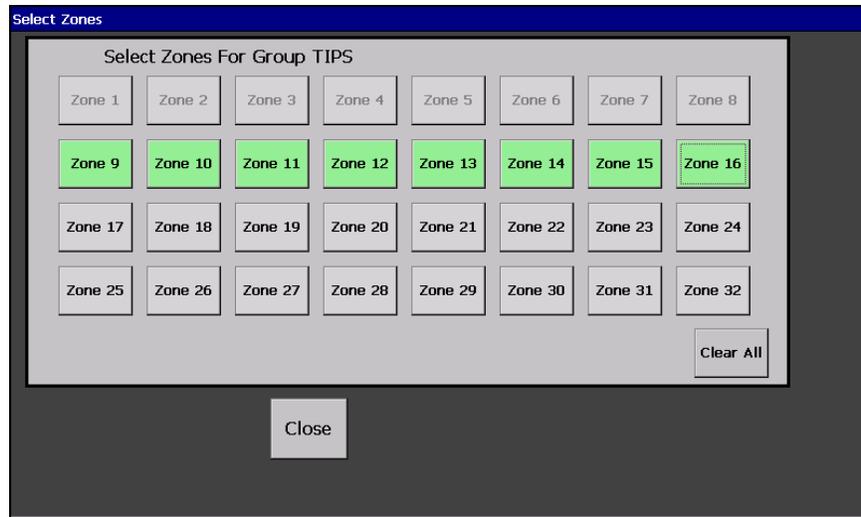
- 4) Tap **Add Group**. The Enter New Group Name window will be displayed.



- 5) Enter the name of the group (six characters maximum) and tap **Enter** to save the name. The new group's name will be displayed on the Group Configuration screen.



- 6) Tap the **Select Zones** button to the right of the name of the new group. The Select Zones screen will open. All zones will be listed, but zones already in a group will be grayed out and not selectable.
- 7) Tap the zones to be included in the group. In the example below, zones 9 through 16 have been selected. (The buttons for zones 1 through 8 are grayed out because those zones already belong to a different group.)



- 8) Tap **Close** to confirm the selections and close the window.
- 9) In the Group Configuration screen, tap **Save** to create the new group and close the Group Configuration window. A button for the group will be displayed at the bottom of the main screen.

## 8. Setting Up Master and Slave Zones

### 8.1 Introduction

The Bedros controller supports the selection of master zones. If you have specified a master zone for a control zone (the “slave”), and a loop break or open thermocouple is detected for the zone, the affected slave zone will flash yellow and use its master zone’s output percent. The mode displayed in the lower-left corner of the problem zone’s “faceplate” on the main display will be **Snn**, where *nn* is the number of the zone whose output is being copied.

For example, you can specify that Zone 5 will be Zone 1’s master zone. If the Bedros controller detects a loop break or open thermocouple for Zone 1, Zone 1 (the slave zone) will flash yellow on the main display. Zone 1’s mode will be **S05**, and its output will follow the output value from Zone 5 (Zone 1’s master).

In this example, if Zone 5 (Zone 1’s master) goes to loop break or open thermocouple alarm state while Zone 1 is following Zone 5, Zone 1 will use the output from Zone 5’s master zone, if any. If Zone 5 has no master zone, then Zone 5’s output will go to zero (if loop break) or configured failsafe state (open thermocouple). Zone 1 will follow Zone 5 to its new output percent.

You can set up master/slave zones anytime, including when a loop break or open thermocouple has already been detected.

### 8.2 Procedure

To set up a master zone:

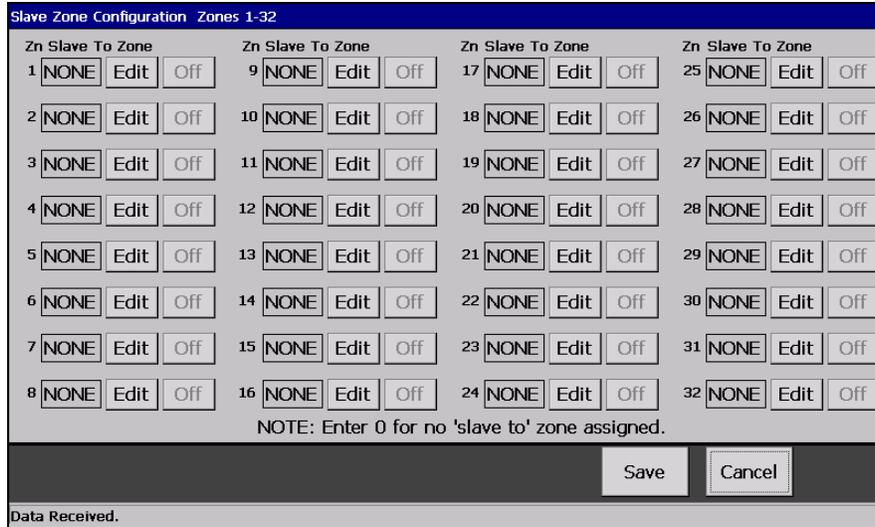
- 1) Select a zone (not necessary the zone to be configured) and tap **Configuration**. The Configuration screen will be displayed.
- 2) Tap **Supervisor** and enter the Supervisor password (if password protection has been enabled). The Supervisor Parameters screen will be displayed.

**Supervisor Parameters (Deg. F)**

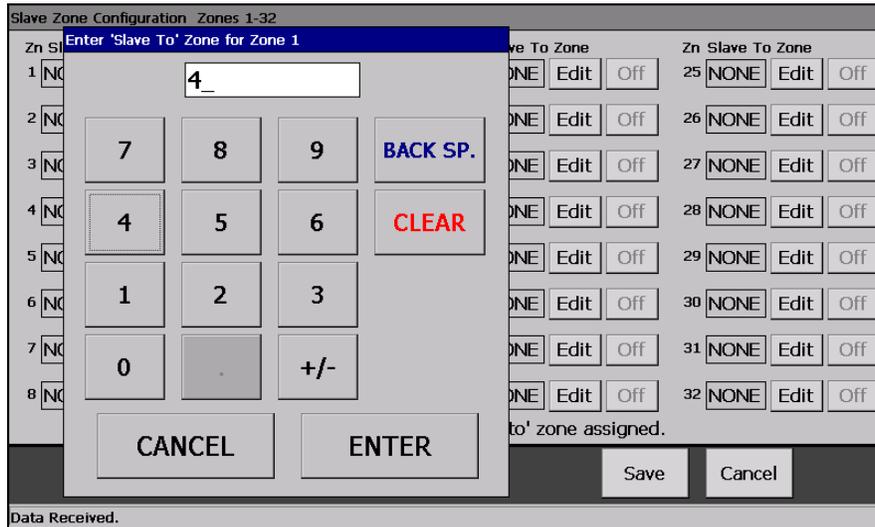
Failsafe Action Off Auto Fixed Pct.	High Safety Limit: 32 Edit (32 Deg F / 0 Deg C = DISABLED) High and Low Readings	Access Control
Failsafe Fixed Output %: 0 Edit	Loop Break Time (Sec.): 300 Edit Note: Enter 9 For Loopbreak OFF	Slave Zones
Line Freq. 50 Hz 60 Hz Note: Will Apply To All Zones	Soft Start Disable Enable	Supervisor Password: 100 Edit
	Off-Line Zones Show Hide	LOAD DEFAULTS
		RESET PID PARAMS
		Save Cancel

Data Received Zones: 1,2,3,4

- 3) Tap **Slave Zones**. The Slave Zone Configuration screen will be displayed.



- 4) To specify a master zone, tap **Edit** next to the zone for which you want to specify a master zone. The Enter “Slave To” Zone window will open.



- 5) Enter the number of the master zone from which the output percent will be copied in case of an open thermocouple or loop break. When you tap **Enter**, the master zone's number will be displayed in the Slave Zone Configuration screen and the feature will be turned on for the edited zone.

In the example shown above and below, Zone 1 has been configured to follow the output of Zone 4 if Zone 1 has a loop break or open thermocouple.

Slave Zone Configuration Zones 1-32

Zn Slave To Zone											
1	4	On	9	NONE	Off	17	NONE	Off	25	NONE	Off
2	NONE	Off	10	NONE	Off	18	NONE	Off	26	NONE	Off
3	NONE	Off	11	NONE	Off	19	NONE	Off	27	NONE	Off
4	NONE	Off	12	NONE	Off	20	NONE	Off	28	NONE	Off
5	NONE	Off	13	NONE	Off	21	NONE	Off	29	NONE	Off
6	NONE	Off	14	NONE	Off	22	NONE	Off	30	NONE	Off
7	NONE	Off	15	NONE	Off	23	NONE	Off	31	NONE	Off
8	NONE	Off	16	NONE	Off	24	NONE	Off	32	NONE	Off

NOTE: Enter 0 for no 'slave to' zone assigned.

Save Cancel

Data Received.

6) Tap **Save**.

You can select a master zone (and turn on the feature) after a problem has occurred.

## 9. Factory Settings

The factory settings are listed in the table below. With the exception of the unit of measure and some Supervisor parameters (noted below), each parameter applies to a single zone. At the factory, all zones' settings are identical.

Category	Parameters	Factory Setting
<b>Input</b>	Input Bias	0 degrees
	Low Setpoint Limit	32 degrees F (0 degrees C)
	High Setpoint Limit	999 degrees F (537 degrees C)
	Input Type	depends on input type specified when the unit was ordered
<b>Boost</b>	Boost Type [applies only to zones running in Normal mode; zones running in Manual mode always use Boost Percentage configured on Boost Parameters screen]	closed loop
	Boost Duration	off
	Boost Setpoint	77 degrees F (25 degrees C)
	Boost Percentage	0
<b>Control</b>	Standby Mode	Open Loop
	Standby Setpoint	77 degrees F (25 degrees C)
	Standby Percentage	0
	PID Proportional Band	24
	PID Rate [derivative action]	7 seconds
	PID Autotune [when performed]	once at next power-up, and then disabled if tuning was successful
	Startup Mode [when unit is powered up and zone is taken out of Idle]	last active [most recent mode]
<b>Display Units (C/F)</b>	Degrees F and Degrees C	F if "D" is "Market" choice in model number C if "X" or "CE" is "Market" choice in model number (see 1.3)  Applies to all zones
<b>Groups</b>	n/a	no groups
<b>Alarm</b>	Alarm Inhibit (Sec.)	0 (off)
	High Deviation	30 degrees F (17 degrees C)
	Low Deviation	30 degrees F (17 degrees C)
	Alarm Silence Seconds	120 seconds—applies to all zones

<b>Category</b>	<b>Parameters</b>	<b>Factory Setting</b>
<b>Supervisor</b> (see Note 1)	Failsafe Action	Auto (use a calculated output value based on output values that have typically successfully maintained the current setpoint for your process in the past; if no history of Normal mode operation, then output is set to zero)—applies to selected zone(s)
	Supervisor Password	100 (password protection disabled)—applies to all zones
	Failsafe Fixed Output %	0—applies to selected zone(s)
	Loop Break Time	300 seconds—applies to selected zone(s)
	Line Freq.[frequency]	60 Hz if “D” is “Market” choice in model number 50 Hz if “X” or “CE” is “Market” choice in model number (see 1.3)  Applies to all zones
	Soft Start [CompuStep <sup>®</sup> gradual warming]	Enabled— applies to all zones that are in Normal (closed loop) mode
	Off-Line Zones [display]	Show—applies to all Off-Line zones
	High [Temperature] Safety Limit	32 degrees F or 0 degrees C (feature off)—applies to selected zone(s)

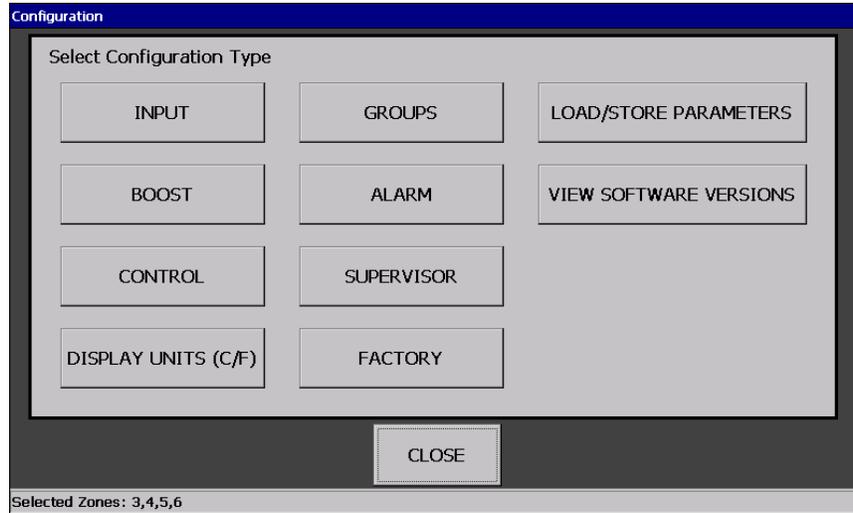
**Note 1: The Supervisor Parameters screen also contains buttons for special functions.**

- **High and Low Readings**—Use this button to open the High and Low Readings screen, which shows the highest and lowest process values for each zone since the last time the **Reset** button for the zone (or the **Reset All** button) was tapped on the High and Low Readings screen.
- **Load Defaults**—Use this button to return all configuration parameters for selected zones to their default values. Note that most parameters that apply to the whole controller will not be reset. For more information, see Section 14.
- **Access Control**—Use this button to open another screen that can be used to limit access to zone-parameter configuration screens and/or to the **MODE**, **SP**, and/or **BOOST** buttons on the main display. (The default is access allowed.) Instructions for limiting operator access to controller functions are in Section 13.
- **Slave Zones**—Use this button to open a screen that can be used to pick a master zone for one or more zones. This feature allows a zone in loop break or open thermocouple alarm state to use another zone’s output percentage. Instructions for setting up slave zones are in Section 8.
- **Reset PID Params**—Use this button to return all tuning parameters for the selected zones to the default (factory) values. **Tapping this button and confirming the reset will undo all Autotuning or manual tuning for the selected zones.**

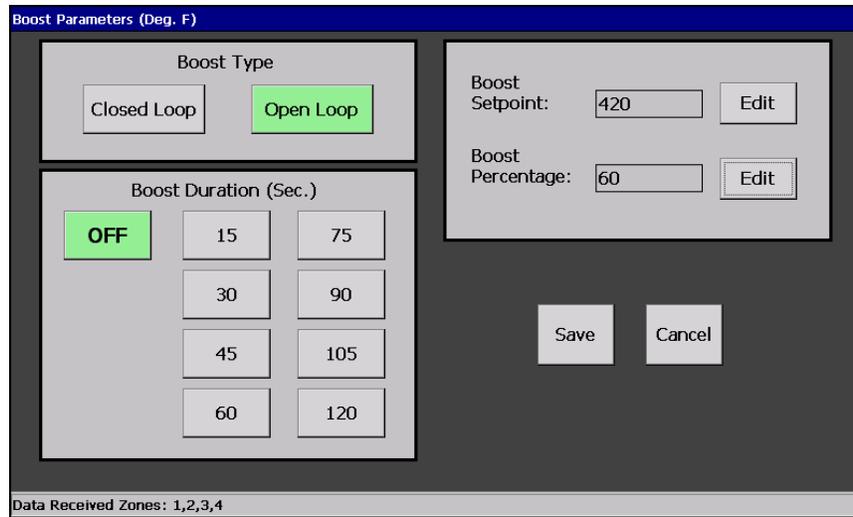
## 10. Changing Parameter Values

To change a parameter value for the selected zone(s):

- 1) Tap **Configuration**. The Configuration screen will be displayed.<sup>9</sup> Notice that the selected zones are listed at the bottom of the screen.



- 2) Tap the name of the category of parameters you want to configure.<sup>10</sup> The appropriate configuration screen will be displayed. For example, if you tap **Boost** you will see the screen below. The screen will display the current value of the parameters for only the lowest-numbered zone currently selected.



<sup>9</sup> If only buttons for password-protected screens (Supervisor and Factory parameter screens) and the read-only screen (Software Versions) are enabled, access to configuration parameters has been limited by your Bedros administrator.

<sup>10</sup> The Configuration screen also contains a button you can use to display the versions of the software in the display unit and in the hardware modules inside the Bedros case. If you call for technical support, please be ready to supply this version information. Factory parameters should be changed only under the direction of the Athena technical support team.

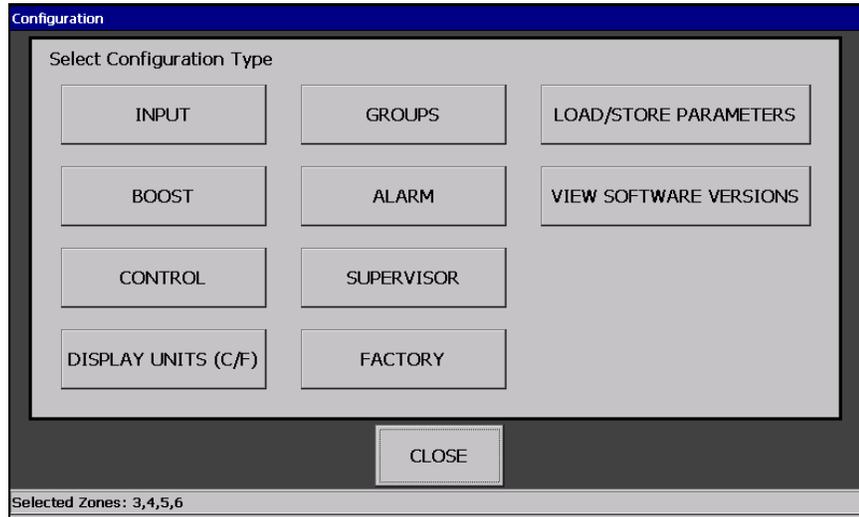
- 3) To change a numerical value, such as the Boost Setpoint on the screen above, tap **Edit** next to the value and use the pop-up window (such as the one show in Section 6) to edit the value. To pick an option, such as Closed Loop or Open Loop boost on the screen above, tap the button labeled with the option.
- 4) Tap **Save** in the parameter window to apply the new values and close the parameter window.

**Tip:** If you get an error message, you tried to enter a value that was out of range.

# 11. Parameter Characteristics

## 11.1 Introduction

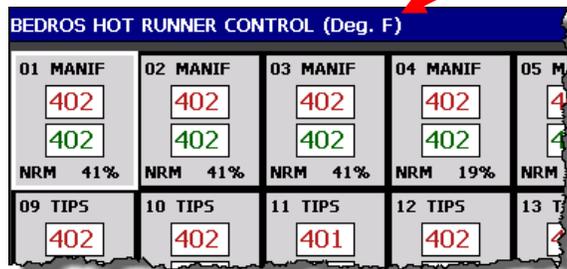
This section contains information about every configuration parameter, including valid ranges, control mode(s) to which the parameter applies, and interactions among parameters.



## 11.2 Display Units

### 11.2.1 Introduction

Look at the top of the main display to see the units of measure for the process values and setpoints displayed.

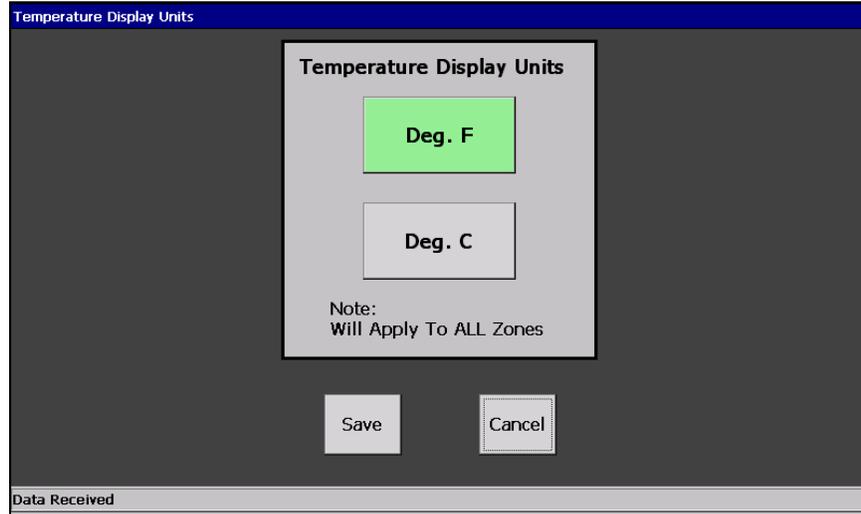


Units ordered for the “Domestic Market” (“D” as fifth character in the model number on the tag to the left of the power connection on the back of the controller) are set to display temperatures in Fahrenheit. Units ordered for “Export” (“X” as fifth character in model number) of “CE” (“CE” as fifth and sixth characters in model number) are set to display temperatures in Celsius.

## 11.2.2 Changing Display Units

If you want to change the unit of measure used for temperature displays:

- 1) On the main display, select any zone so you can access the Configuration screen by tapping **Config**.
- 2) On the Configuration screen tap **Display Units**. The Temperature Display Units screen will be displayed.



- 3) Tap **Deg. F** or **Deg. C**, and then tap **Save**. The selected unit of measure will be used to display temperatures for all zones. Setpoints and other temperature values previously entered while a different unit of measure was in use will be converted automatically.

## 11.3 Supervisor Parameters

### 11.3.1 Introduction

You can use the Supervisor Parameters window to specify the values of several parameters related to process protection for the selected zones. You can also use this screen to set up parameters that apply to the whole controller.

This screen also contains buttons that can be used open other screens for special functions.

The Supervisor Parameters screen can be password protected. Bedros controllers are shipped with the Supervisor password set to 100, which disables this feature. You can use this screen to specify a different password. Only users who know your new three-digit password will be able to access the Supervisor Parameters screen.

### 11.3.2 Supervisor Parameters and Settings

Name	Applies to				Range/ Choices	Default	Description & Interactions
	Selected Zones	All Zones	Closed Loop Control	Open Loop Control			
<b>Failsafe Action</b>	X		X	X	Off Auto Fixed Pct.	Auto	output action to be used when controller detects an open or reversed sensor: off, automatically calculated based on past good output values (if no history of Normal mode output values, then zero), or failsafe fixed output percent
<b>Failsafe Fixed Output %</b>	X		X		0 to 100%	zero	output percent used only if open or reversed sensor is detected and Failsafe Action is set to Fixed Pct.
<b>Loop Break Time (sec.)</b>	X		X	X	9 = feature disabled 10 to 999 seconds	300 seconds	time period during which the input should change 1% of supported sensor span (9.67 °F or 5.37 °C) in response to output action if the sensor is working correctly and the input wiring is intact
<b>Line Freq.</b>		X	X	X	60 Hz 50 Hz	—	input line frequency; set at factory to: 60 if “D” is “Market” choice in model number 50 if “X” or “CE” is “Market” choice in model number
<b>High Safety Limit</b>	X		X	X	33 to 999 °F 1 to 537 °C	feature off (32 °F 0 °C)	output will be turned off if process value reaches this temperature
<b>Soft Start</b>	X		X		disable enable	enabled	gradual increase of output to slowly dissipate moisture in heaters; see 1.2.3
<b>Off-Line Zones</b>		X	X	X	show hide	show	zones set to Off-Line on the Mode screen will not be included in main display if this parameter is set to “hide”
<b>Supervisor Password</b>		X	X	X	101 to 999 100 = no password required	100	password needed to access the Supervisor Parameters screen
<b>High and Low Readings</b>		X	X	X	—	—	<i>button opens High and Low Readings screen, which shows highest and lowest process values for each zone since the last time the <b>Reset</b> button for the zone (or the <b>Reset All</b> button) was tapped on the High and Low Readings screen</i>
<b>Access Control</b>		X	X	X	—	—	<i>button opens screen used to enable/disable some function buttons on main display; see Section 13</i>
<b>Slave Zones</b>		X	X	X	—	—	<i>button opens screen used to specify (for one or more zones) another zone’s output to be followed in case of loop break or open thermocouple; see Section 8</i>
<b>Load Defaults</b>	X		X	X	—	—	<i>button used to reset parameters to default values; see Section 14</i>
<b>Reset PID Parameters</b>	X		X		—	—	<i>button used to return tuning parameter values to their factory (default) settings, undoing Autotuning or manual tuning</i>

## 11.4 Input Parameters

### 11.4.1 Introduction

You can use the Input Parameters window<sup>11</sup> to specify (for the selected zone(s):

- bias (if any) to be applied to the input,
- setpoint range, and
- input type

### 11.4.2 Input Parameters and Settings

Name	Applies to				Range/ Choices	Default	Description & Interactions
	Selected Zones	All Zones	Closed Loop Control	Open Loop Control			
Input Bias	X		X	X	-100 to 100 °F -55 to 55 °C	zero degrees	number of degrees that will be added to or subtracted from the measured process value before it is displayed
Low Setpoint Limit	X		X		32 to 999 °F 0 to 537 °C	32 °F 0 °C	lowest and highest values that can be entered as setpoint (before bias is applied); also limits configurable range of boost setpoint and standby setpoint
High Setpoint Limit	X		X		32 to 999 °F 0 to 537 °C	999 °F 537 °C	
Input Type		X	X	X	J or K	input type specified when unit was ordered	switching to input type that does not match the type specified when the unit was ordered can adversely affect the accuracy of temperature measurements

<sup>11</sup> To see whether the unit was wired internally for use with J or K thermocouples, look at the character in the last “Option” position in the model number on the tag on the back of the case. To see which are the “Option” characters, look at the model number breakdown in 1.3.

## 11.5 Control Parameters

### 11.5.1 Introduction

You can use the Control Parameters window to specify how the selected zone(s) will be controlled:

- at startup (after the controller has been turned on and you have pressed the Run/Idle key to take the controller out of Idle),
- during normal operation, and
- when the **Mode** screen is used to put the zone in Standby or when a zone configured to start up in Standby mode comes out of Idle.

The Control Parameters window is also used to specify whether and how often Autotuning (described in Section 12) is done.

### 11.5.2 Control Parameters and Settings

Name	Applies to				Range/ Choices	Default	Description & Interactions
	Selected Zones	All Zones	Closed Loop Control	Open Loop Control			
<b>Standby</b> [control mode]	X		X	X	Open Loop Closed Loop	Open Loop	type of control used while the controller is in standby mode: closed loop (Standby Setpoint used) or open loop (Standby Percentage used)
<b>Standby Setpoint</b>	X		X		<i>Low Setpoint Limit to High Setpoint Limit (from Input Parameters screen)</i>	77 °F 25 °C	setpoint used when zone is in closed loop standby mode
<b>Standby Percentage</b>	X			X	0 to 100 %	zero	output percent used when zone is in open loop standby mode
<b>Startup Mode</b>	X		X	X	<b>Auto</b> [closed loop] <b>Standby</b> <b>Manual</b>		mode used for the zone when the controller goes from Idle to Run (because operator pushed Run/Idle key)

**Bedros Hot Runner Controller Configuration and Operation Manual**

Name	Applies to				Range/ Choices	Default	Description & Interactions
	Selected Zones	All Zones	Closed Loop Control	Open Loop Control			
					[open loop] Idle [remains in Idle after Run/Idle key is pushed to set controller to run] <b>Last Act.</b> [last active: same mode as last time controller was running]		on the front of the case)
<b>PID Proportional Band</b>	X		X		1 to 999 °F 1 to 537 °C	24 °F 13 °C	width of the band below the setpoint within which the controller will modulate the output as the process value approaches the setpoint; <b>Autotuning sets this value automatically</b> ; see Section 12
<b>PID Rate</b> [derivative action]	X		X		0.0 to 999 seconds	7 seconds	time period used by the derivative component of the control algorithm when analyzing load changes; <b>Autotuning sets this value automatically</b> ; see Section 12  The integral action for PID control is not configurable; the integral (reset) action is always equal to six times the configured derivative (rate) action.
<b>PID Autotune</b>	X		X		Disable Once [then disabled after successful Autotune] Enable [Autotunes every time controller is powered up] Once Only [and then disabled, even if Autotune was not successful]	Once	whether and when Autotune should be done

## 11.6 Alarm Parameters

### 11.6.1 Introduction

High and low deviation alarms are supported for each zone. The alarm setpoints are configurable on the Alarm Parameters screen. As long as the process value differs from the setpoint by the configured alarm setpoint, the zone flashes red on the main display and the **HID** or **LOD** (high deviation or low deviation) alarm message is displayed. An audible alarm sounds. The output remains on when a low deviation alarm is detected. The output goes off while a zone is in the high alarm state. Deviation alarms clear automatically when the alarm condition clears.

You can use the Alarm Parameters window to specify for the selected zone(s):

- how many seconds after zone is taken out of Idle the controller should wait before indicating a low alarm (Alarm Inhibit)
- number of degrees the process value must exceed the setpoint before the zone goes into alarm (High Deviation)
- number of degrees the process value must fall short of the setpoint before the zone goes into alarm (Low Deviation)
- the number of seconds the audible alarm on the Bedros unit will be silenced when the Alarm Silence key (on the front of the Bedros case) is pressed; this value applies to ALL zones in alarm; the value is also used to temporarily turn off any alarm-signaling devices connected to the contacts affected by the alarm-silence function.

Alarm Parameters (Deg. F)

Alarm Inhibit (Sec.):

High Deviation:

Low Deviation:

Alarm Silence Seconds:

Note:  
Will Apply To ALL Zones

Data Received Zones: 1,2,3,4,5,6,7,8

### 11.6.2 Alarm Parameters and Settings

Name	Applies to				Range/ Choices	Default	Description & Interactions
	Selected Zones	All Zones	Closed Loop Control	Open Loop Control			
<b>Alarm Inhibit (Sec.)</b>	X		X	X	0 to 999 seconds	0 (off)	number of seconds the controller should wait after zone is taken out of Idle before signaling a low alarm
<b>High Deviation</b>	X		X	X	1 to 999 °F 1 to 537 °C	30 °F 17 °C	number of degrees the process value must exceed the setpoint to trigger the alarm state
<b>Low Deviation</b>	X		X	X	1 to 999 °F 1 to 537 °C	30 °F 17 °C	number of degrees the process value must fall below the setpoint to trigger the alarm state
<b>Alarm Silence Seconds</b>		X	X	X	0 to 600 seconds	120 seconds	number of seconds the audible alarm on the Bedros unit will be silenced when the Alarm Silence key (on the front of the Bedros case) is pressed; the value is also used to temporarily turn off any alarm-signaling devices connected to the contacts affected by the alarm-silence function

## 11.7 Boost Parameters

### 11.7.1 Introduction

A **BOOST** button is on the Bedros main display. When you tap the **BOOST** button, the output of the selected zones will be increased temporarily.

You can use the Boost Parameters window to specify for the selected zone(s):

- whether the boost function will be closed loop (based on a setpoint) or open loop (based on a specified output percent)
- boost setpoint and duration for closed loop boost
- boost output percentage and duration for open loop boost

### 11.7.2 Boost Parameters and Settings

Name	Applies to				Range/ Choices	Default	Description & Interactions
	Selected Zones	All Zones	Closed Loop Control	Open Loop Control			
<b>Boost Type</b>	X		X		Open Loop Closed Loop	Closed Loop	type of control used after the BOOST button on the main display is pressed; applies only to zones running in Normal mode; zones running in Manual mode always use Closed Loop boost
<b>Boost Duration</b>	X		X	X	Off, or number of seconds on buttons on parameters screen	Off	length of boost
<b>Boost Setpoint</b>	X		X		Low Setpoint Limit to High Setpoint Limit (from Input Parameters screen)	77 °F 25 °C	setpoint used in Closed Loop boost
<b>Boost Percentage</b>	X			X	0 to 100 %	0 (off)	output percent used in Open Loop boost

## 12. Tuning the Controller for PID Control

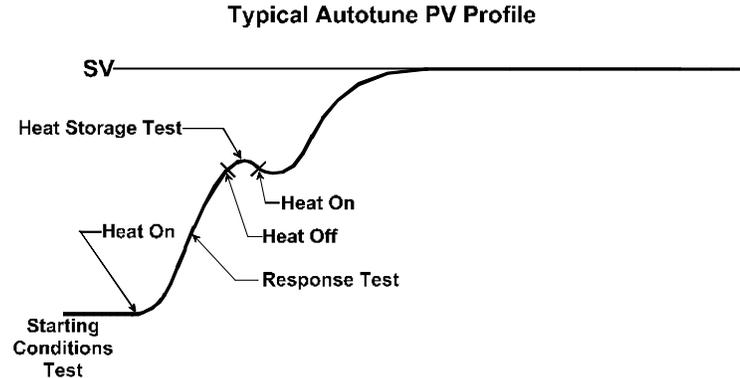
### 12.1 Introduction

Bedros Hot Runner Controllers support automatic tuning for control of zones running in CompuCycle Normal (closed loop) mode.

By default, every Bedros controller is configured to execute the Autotune operation the first time it is powered up, then to disable the Autotune feature after a successful Autotune has been completed.

The Autotune operation overwrites any existing proportional band and derivative (rate) parameter values that were previously configured.<sup>12</sup>

All Bedros controllers in a single process should be Autotuned simultaneously, so that interactions between zones during tuning parallel the interactions expected while the controllers are in use.



### 12.2 Procedure for Autotuning

To Autotune:

- 1) Make sure the controller is in Idle (LED above keypad is amber).
- 2) After configuring any parameters that you want to change from the defaults, enter a setpoint (for each zone or group of zones) that is representative of the setpoint you expect to use when the selected zones are in Normal mode operation.
- 3) If a successful Autotune has been completed in the past, the Autotune feature may be disabled. To force an Autotune operation, use the Control Parameters screen to set the PID Autotune parameter to Enable.
- 4) Cycle the power to the controller.
- 5) At this point the controller may execute a CompuStep soft start.

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<sup>12</sup> If you need to return PID parameter values for selected zones to their factory (default) settings, select the zones and then tap the **Reset PID Parameters** button on the Supervisor Parameters screen. A confirmation window will be displayed. When you tap **Yes** in this confirmation window, the Proportional Band and Rate parameters will be set to their factory settings. The integral time (not configurable) will be set automatically to 6 times the value of the Rate parameter.

- If you want the soft start to continue to its normal conclusion (recommended), do not press any on-screen buttons or keys on the case.
- If you want to terminate the soft start (not recommended), use the **MODE** button and screen to set the selected zones' mode to Normal.

When the Autotune operation begins, the mode indicator at the lower left corner of the zone's display will be "NTU." Unless you want to terminate the Autotune by changing a zone's mode, do not press any buttons on screen or keys on the case during the Autotune operation. The lower line will continue to display the setpoint you entered in Step 2.

When the controller has completed Autotuning a zone successfully, the display for this zone will revert to the Normal mode operating display with the mode "NRM" displayed in the lower left corner of the zone's display. The controller will save the tuning parameter values in the Proportional Band and Rate parameters for all zones that have Autotuned successfully. (The new tuning values can be viewed on the Control Parameter screen.)

If Autotune was unsuccessful for a zone, the zone will:

- use default values for PID parameters,
- go into alarm (flashing red background),
- display its process value alternating with one of the tuning error codes listed in 12.3, and
- go to configured failsafe state; the effect on a zone's output depends on how you configured the failsafe action parameter on the Supervisor Parameters screen.

To clear the error display and put the controller in standby mode, use the **MODE** button and screen. (The effect on each zone's output depends on the configuration selections you made on the Control Parameters screen.)

Fix the problem (see error code meanings in next subsection) and try tuning again.

Once Autotune has been completed successfully for all Normal zones ("NRM" mode displayed) use the Control Parameters screen to disable PID Autotune.

## 12.3 Autotune Errors

The Autotune error codes are in the table below.

Error Code	Description
Tu3	Setpoint is lower than the process value. Look at the setpoint. If it is realistic for your process, then check the thermocouple leads; maybe they are reversed.
Tu5	The initial process value and the setpoint are not far enough apart. For Autotune to work, the difference must be at least 9 degrees F (5 degrees C).
Tu8	The startup curve (change in PV) was not acceptable to the Autotune algorithm. This problem could be caused by a process upset that occurred during tuning. Try Autotuning again when the process is stable. If the error recurs, your process is not suitable for Autotuning. Use manual tuning as described in 12.4.
Tu9	The Autotuning timed out, because the process was unresponsive (or extremely slow to respond). Your process is not suitable for Autotuning. Tune the controller manually as described in 12.4.
Tun	The Autotune operation failed for a reason other than those listed above. Try Autotuning again when the process is stable.

## 12.4 Manual Tuning (Zeigler-Nichols PID Method)

### 12.4.1 Introduction

This tuning method may be used if the spread between initial process temperature and process operating temperature is small, or if the process is too slow for Autotuning. Manual tuning requires that zones be tuned one at a time and that the PV be tracked over time. (Graph the displayed PV against time manually.) All zones should be running while manually tuning one zone.

After you have finished manual tuning, you can change the Startup Mode setting and enable soft start (recommended).

### 12.4.2 Procedure

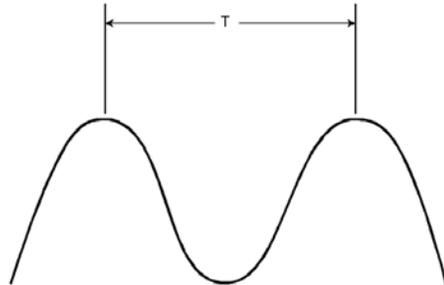
To do manual tuning:

- 1) After configuring any parameters that apply to your control strategy, enter a setpoint that is representative of the setpoint you expect to use when the selected zone is in normal operation.
- 2) Go to the Control Parameters screen.
- 3) For now, leave the PID Proportional Band set to 24 °F (13 °C), but change the PID Rate to 0 seconds.
- 4) On the Control Parameters screen, set the PID Autotune parameter to Disable.
- 5) Return to the main display and watch the behavior of the displayed process value. When the temperature reaches setpoint, plot a graph of the displayed process value against time or record the time period between temperature peaks. (Be patient. It may be several minutes before you see up and down changes (oscillation) in the process value for a manifold zone.)

- 6) If the temperature (process value) will not oscillate, then decrease the proportional band value by repeatedly halving the value until a small, sustained temperature oscillation is seen.

Alternatively, if the temperature (process value) oscillates severely, double the proportional band value repeatedly until a small, sustained temperature oscillation is observed.

- 7) Measure the period in seconds of one cycle of oscillation ("T" on the diagram below).



- 8) Divide the period of oscillation (T) by 8. The resulting number (quotient) is the correct PID Rate parameter value (derivative) time in seconds.
- 9) Access the Control Parameters screen and enter the PID Rate value obtained in Step 8. The integral time will be set automatically to 6 times the rate. (You cannot view the integral term value.)
- 10) If the process is stable, manual tuning is completed. However, if slight oscillation is observed, multiply the current proportional band value by 1.66 and enter the product as the new PID Proportional Band value to complete the tuning procedure for this zone.

# 13. Restricting Access to Controller Functions

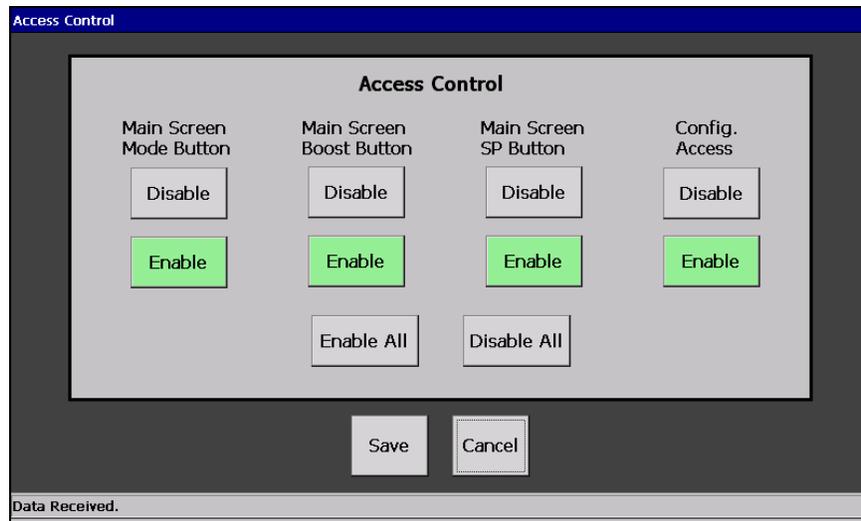
## 13.1 Introduction

If you have access to the Supervisor Parameters screen, you can disable function buttons on the main display.

## 13.2 Procedure

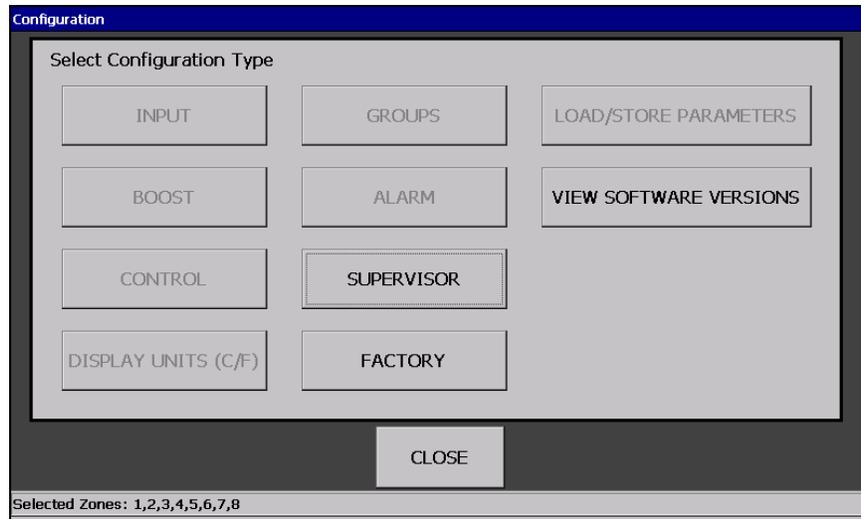
To disable/enable one or more function buttons:

- 1) Select any zone on the main display and tap **Configuration**. The Configuration screen will be displayed.
- 2) Tap **Supervisor** and enter the Supervisor password (if password protection has been enabled). The Supervisor Parameters screen will be displayed.
- 3) Tap **Access Control**. The Access Control screen will be displayed. When units are shipped from the factory, all function buttons on the main display are enabled.



- 4) Tap **Enable** (or **Disable**) buttons as appropriate for your process.
- 5) Tap **Save**.

Note that if you disable access to Configuration, the Configuration screen will still be accessible to operators, but all buttons except **Supervisor**, **Factory**, and **View Software Versions** will be disabled as shown on the next page.



# 14. Resetting Parameters to the Default Values

## 14.1 Introduction

Using this function returns all configuration parameter values for selected zones to their defaults (shown in Section 11). The setpoints for the selected zones will be changed to 77 degrees F (25 degrees C).

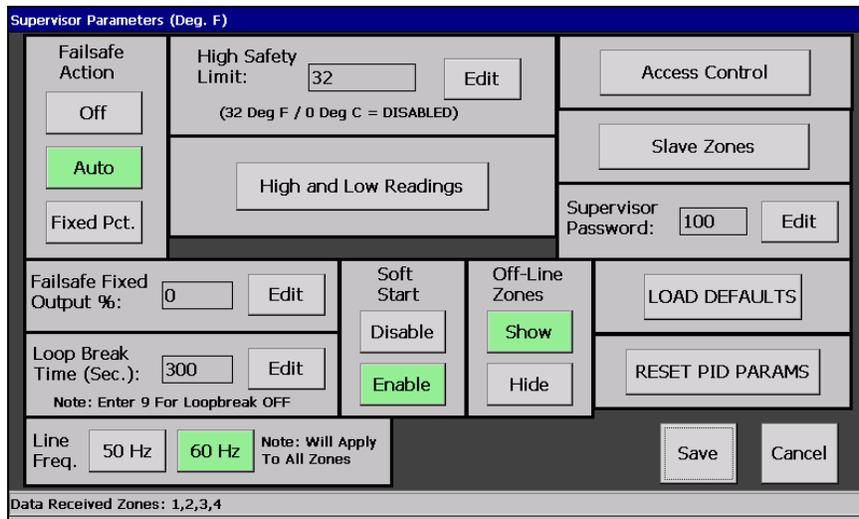
Reloading defaults never affects the following settings that apply to the whole controller: display units, input type, line frequency, groups. These settings that apply to the whole controller are not reset, even if all zones are selected before loading defaults.

When all zones have been selected for resetting defaults, some settings that apply to the whole controller WILL be reset to the defaults shown in Section 11. These values that are returned to the defaults include the Supervisor password (which will be reset to 100, disabling password protection) and Access Control settings described in Section 13.

## 14.2 Procedure

To load defaults to selected zones:

- 1) Tap **Configuration**. The Configuration screen will be displayed.
- 2) Tap **Supervisor** and enter the Supervisor password (if password protection has been enabled). The Supervisor Parameters screen will be displayed.



- 3) Tap **Load Defaults**. A confirmation window will be displayed.
- 4) Tap **Yes**. The defaults will be loaded to the selected zones. You must cycle power to the Bedros unit for the changes to take effect.

# 15. Loading and Storing Parameter Values

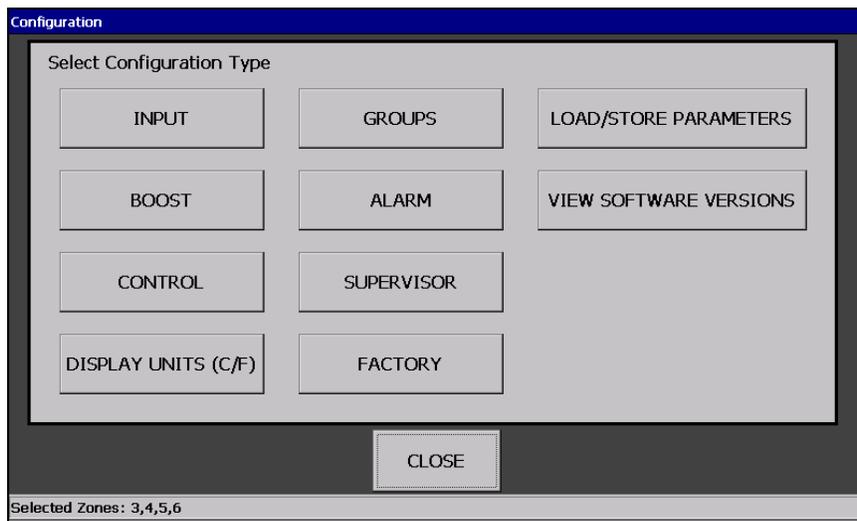
## 15.1 Introduction

You can save all configuration parameter values, group assignments, and setpoints for all zones to a local file or to a file on a USB device. (A standard USB port and a mini-USB port are on the back of the Bedros case.) You can load the saved configuration parameters, group assignments, and setpoints to the same controller or to a different controller that has the same quantity of zones.

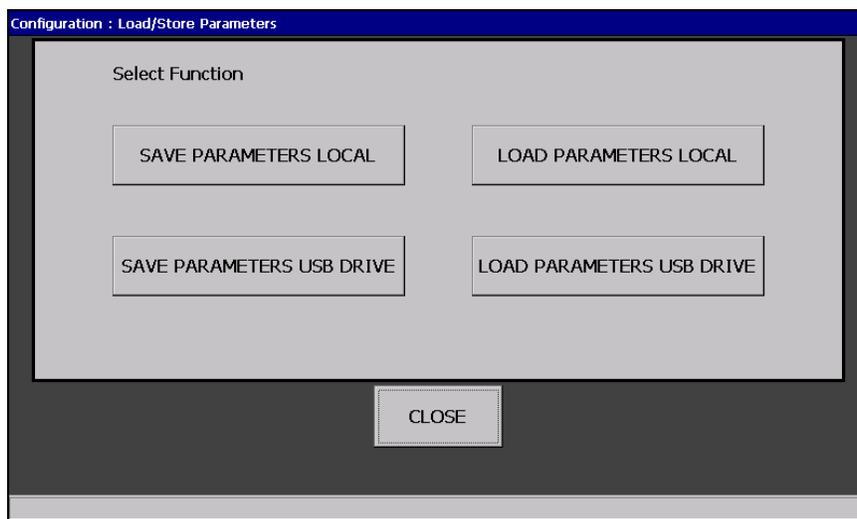
## 15.2 Storing Procedure

To store configuration parameters, group assignments, and setpoints for all zones:

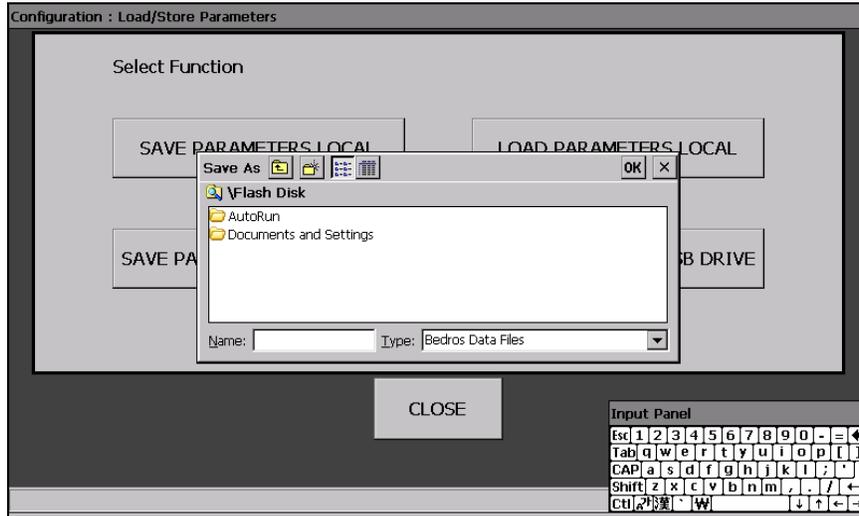
- 1) Select at least one zone, and then tap **Configuration**. The Configuration screen will be displayed.



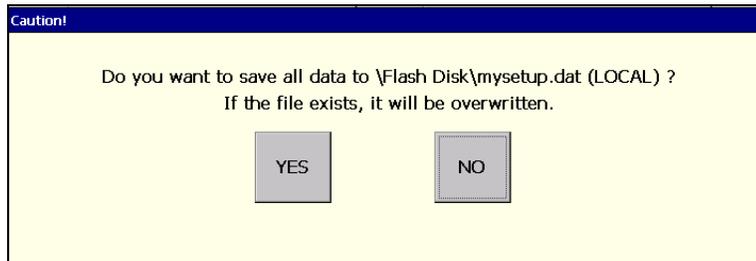
- 2) Tap **Load/Store Parameters**. The Load/Store Parameters screen will be displayed.



- 3) Tap the appropriate **Save** button. For example, if you want to save the configuration parameter values and group assignments for all zones to a file on the Bedros controller, tap **Save Parameters Local**. The Save As window will pop up.



- 4) In the Save As windows, the local Bedros memory is called “Flash Disk.” An external device connected to the USB port is called “Hard Disk”. Use a blunt plastic stylus or the eraser end of a pencil (NOT THE POINT OF THE PENCIL) on the Input Panel to enter the name of the file where the configuration parameters will be stored, and then tap **OK**. A confirmation window will be displayed.



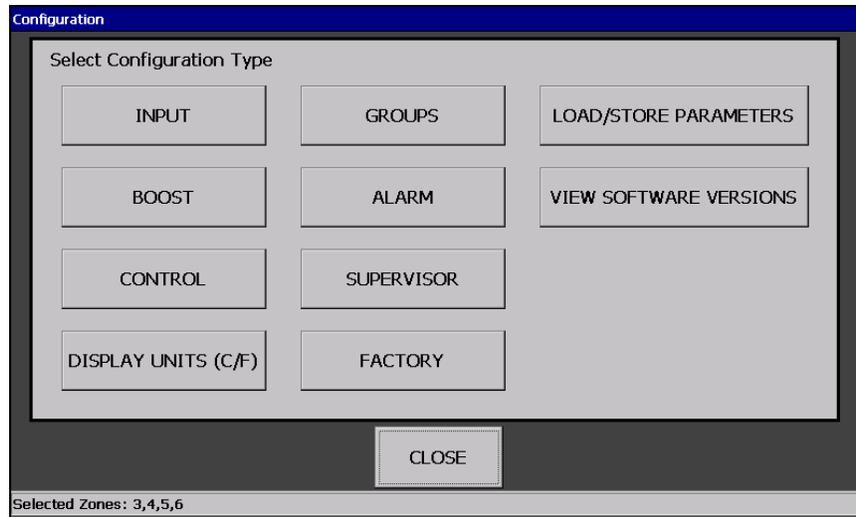
- 5) To save the file, tap **Yes** in the confirmation window. Note that if a file with the same name already exists, it will be overwritten. A “Please Wait” message will be displayed.

When the message clears, your file has been saved successfully.

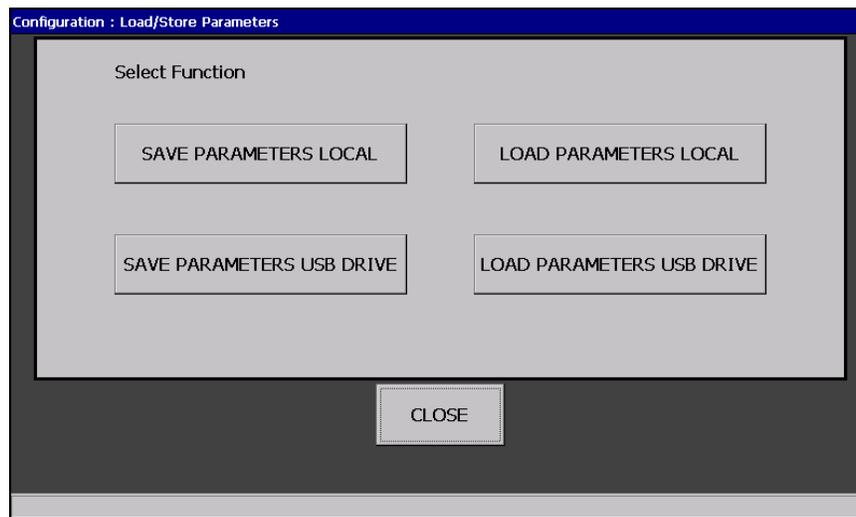
## 15.3 Loading Procedure

To load configuration parameters, group assignments, and setpoints for all zones:

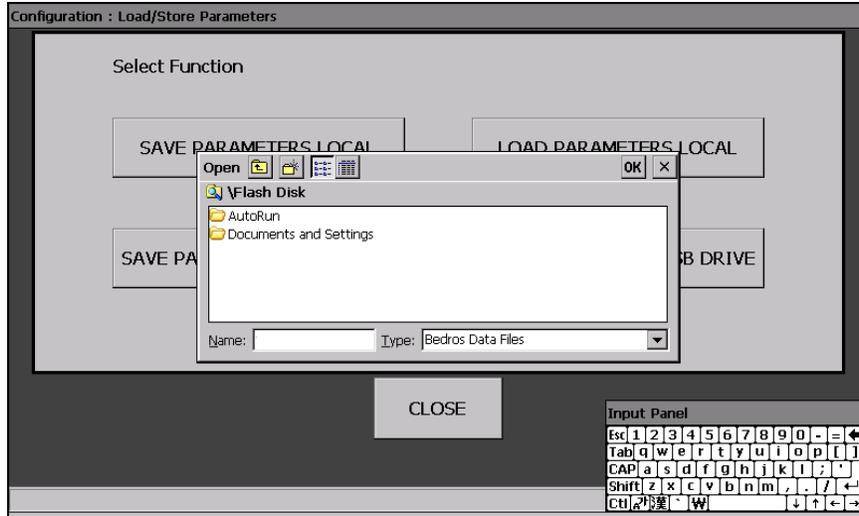
- 1) Press the Run/Idle key to put all zones in Idle.
- 2) Tap **Configuration**. The Configuration screen will be displayed.



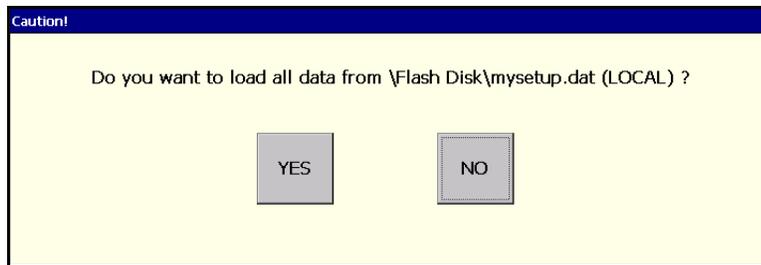
- 2) Tap **Load/Store Parameters**. The Load/Store Parameters screen will be displayed.



- 3) Tap the appropriate Load button. For example, if you want to load the configuration parameter values from a file on the Bedros controller, tap **Load Parameters Local**. The Open window will pop up.



- 4) In the Open window, the local Bedros memory is called “Flash Disk.” An external device connected to the USB port is called “Hard Disk.” Use a blunt plastic stylus or the eraser end of a pencil (NOT THE POINT OF THE PENCIL) to find and select the name of the file where the configuration parameters have been stored, and then tap **OK**. A confirmation window will be displayed.



- 5) To load the settings in the file, overwriting existing configuration, group assignments, and setpoints in the controller, tap **Yes** in the confirmation window. A “Please Wait” message will be displayed.

When the message clears, your file has been loaded successfully. The controller will immediately start using the parameter values, group assignments, and setpoints from the loaded file.

# 16. Viewing Software Versions

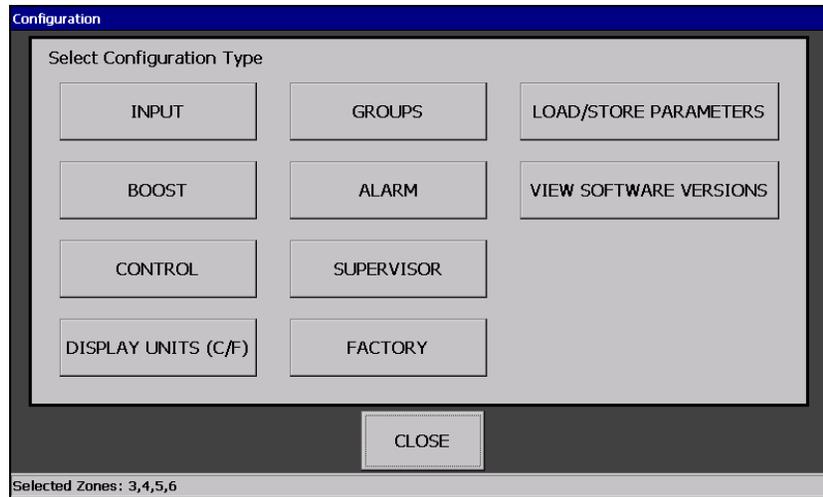
## 16.1 Introduction

You can view the versions of the software in the Bedros controller. You may need this information if you call for technical support. (This information is also displayed briefly when the controller is powered up.)

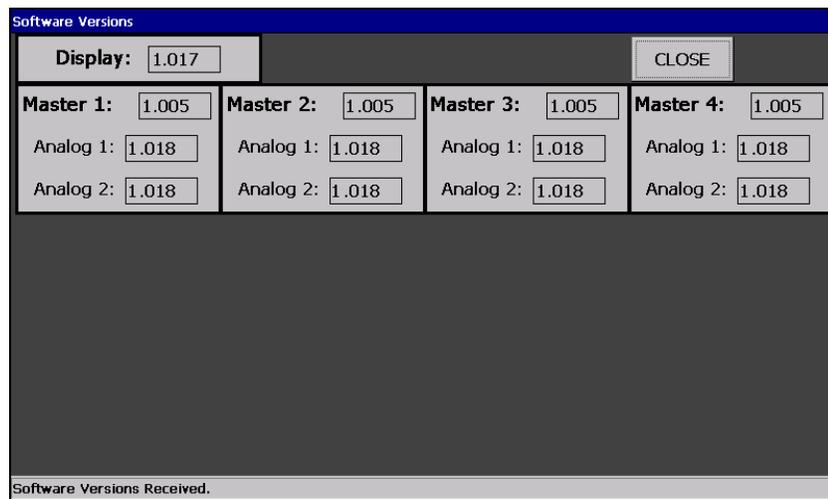
## 16.2 Procedure

To view software versions:

- 1) Select at least one zone, and then tap **Configuration**. The Configuration screen will be displayed.



- 2) Tap **View Software Versions**. The Software Versions screen will be displayed.



The “Display” information refers to the software that generates the displays on the touch

screen. The “Master” units are modules within the controller.<sup>13</sup> These are the modules that process inputs and calculate outputs for the zones. Each Master unit controls several zones. The quantity of zones supported by your Bedros unit determines the quantity of Master units needed. Each Master unit contains two analog input boards. The “Analog” software runs on those input boards.

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<sup>13</sup> These Master hardware modules are not related to the master/slave zones described in Section 8.

## 17. Index

### A

access control, 23, 29, 40, 42  
Access Control screen, 40  
alarm indication, 7, 12  
Alarm Inhibit parameter, 22, 34  
alarm outputs, 12  
Alarm parameters, 22, 33  
alarm priorities, 13  
Alarm Silence key, 11, 12  
Alarm Silence Seconds parameter, 22, 34  
arrow keys, 11  
auto reset, 39  
Autotune errors, 13, 38  
Autotuning, 36

### B

bias, 30  
blue zone, 7, 8  
Boost button, 7, 10  
Boost button, disabling, 23  
Boost Duration parameter, 22, 35  
boost function, 3  
Boost mode, 8  
Boost parameters, 22, 35  
Boost Percentage parameter, 22, 35  
Boost Setpoint parameter, 22, 30, 35  
Boost Type parameter, 22, 35  
bumpless transfer, 1

### C

Celsius, 5, 22, 26  
changing parameter values, 24  
changing setpoint, 10  
Clear All button, 10  
CompuStep<sup>®</sup> soft start, 14  
CompuStep<sup>®</sup> soft start, 29  
Config button, 7, 10  
configuration function, limiting access, 23  
Configuration screen, 24, 43, 44, 47  
Control parameters, 22, 31  
cursor, 9, 10

### D

default settings (factory), 22  
default values, restoring, 42  
derivative action, 22, 37, 38  
deselecting groups, 9, 16  
deselecting zones, 9  
deviation alarms. See alarm  
display, 7, 8  
Display Units, 22, 26, 42

### E

Enter Fixed Output Percentage screen, 15  
enter key, 9  
Enter New Group Name window, 16  
Enter Setpoint screen, 15  
ER1 alarm, 13  
ER2 alarm, 13

### F

Factory parameters, 24  
factory settings, 22  
Fahrenheit, 5, 22, 26  
failsafe action, 23, 29, 37  
Failsafe Action parameter, 23  
Failsafe Fixed Output % parameter, 23  
failsafe state, 8  
FSF mode indicator, 8

### G

gfi alarm, 13  
GFI alarm, 13  
Group Configuration screen, 16  
group selection, 9, 16  
groups of zones, 6, 8, 16, 42

### H

hard ground fault detected, 13  
hardware installation instructions, where to find, 1  
Hardware Standby mode, 8  
HID alarm, 13  
High and Low Readings screen, 23, 29  
high deviation alarm message, 13  
High Deviation parameter, 22, 34  
High Safety Limit, 6, 13, 23, 29  
High Setpoint Limit parameter, 22, 30  
highest process value, 23, 29

### I

IDL mode indicator, 8  
inhibiting alarms, 34  
Input Bias parameter, 22, 30  
input failure, 29  
Input parameters, 22, 30  
Input Type parameter, 30, 42  
installation instructions, where to find, 1  
integral action, 32, 39

### K

keypad, 5, 11

**L**

LED on keypad, 5  
Line Freq. parameter, 23, 29, 42  
loading default values, 23, 29  
loading parameter values (from file), 44  
LOD alarm, 13  
loop break detected, 13, 19  
Loop Break Time parameter, 23, 29  
low deviation alarm message, 13  
Low Deviation parameter, 22, 34  
Low Setpoint Limit parameter, 22, 30  
lowest process value, 23, 29  
LPB alarm, 13

**M**

main display, 7, 8  
MAN mode indicator, 8  
Manual mode, 1, 8  
Manual Mode Boost, 8  
Manual mode output percent, changing, 14, 15  
manual tuning, 38  
manual tuning procedure, 38  
master zones, 19  
Mode button, 7, 10, 14  
Mode button, disabling, 23  
mode, changing, 14  
mode, viewing, 8  
modes of operation, 8  
multi-zone selection, 10

**N**

Normal mode, 1, 8  
Normal Mode Boost, 8  
Normal Soft Start mode, 8  
Normal Tuning mode, 8  
NRB mode indicator, 8  
NRM mode indicator, 8, 37  
NSS mode indicator, 8  
NTU mode indicator, 8, 37

**O**

OFF mode indicator, 8  
off-line zones, 5, 8, 14, 23, 29  
open thermocouple detected, 13, 19, 29  
Operating Mode screen, 14  
operating modes, 8  
output failsafe value, 29  
output percent, changing, 14, 15  
output percent, viewing, 8  
outputs, state on power up, 4

**P**

parameter values, changing, 24  
password, 3, 6, 29  
Pct displayed, 8, 12  
PID Autotune parameter, 22, 32, 36, 37, 38  
PID Rate parameter, 22, 37, 38  
power switch, 5  
powering up controller, 4  
process value, highest, 23, 29  
process value, lowest, 23, 29  
process value, viewing, 8  
proportional band, 39  
Proportional Band parameter, 22, 32, 38, 39  
Proportional-Integral-Derivativel. See PID

**R**

Rate parameter, 22, 32, 37, 38  
red zone, 7, 12  
reversed sensor, 29  
reversed thermocouple, 13, 38  
Run/Idle key, 5, 11

**S**

SAF alarm, 13  
safety information, I  
security access, 3  
Sel.Type button, 9, 10  
Select All button, 10  
Select Zones screen, 17  
selected zone, 7, 8, 9  
sensor failure, 29  
setpoint, changing, 10, 15  
setpoint, viewing, 8  
silence alarms, 12  
single-zone selection, 9, 10  
slave zones, 19, 29  
soft ground fault detected, 13  
soft start, 6, 8, 14, 23, 29  
Soft Start parameter, 23  
software versions, 24  
SP button, 7, 10, 15  
SP button, disabling, 23  
SSS mode indicator, 8  
Standby mode, 8  
Standby Mode parameter, 22  
Standby parameter, 31  
Standby Percentage parameter, 22, 31  
Standby Setpoint parameter, 22, 30, 31  
Startup Mode parameter, 22, 31  
storing parameter values, 43, 47  
Supervisor parameters, 23, 28  
Supervisor Parameters screen, 19, 40  
Supervisor password, 3, 6, 23, 29, 42

**T**

TCo alarm, 13  
TCr alarm, 13  
touch screen, 7, 8  
Tu3 error, 13, 38  
Tu5 error, 13, 38  
Tu8 error, 13, 38  
Tu9 error, 13, 38  
Tun error, 13, 38  
tuning, 36  
tuning errors, 13, 38  
tuning parameters, 22, 32, 37

**U**

unit of measure, 5, 26  
unused zone, 5, 8, 23, 29

**V**

viewing software versions, 24

**W**

white border, 9, 10  
wiring diagrams, where to find, 1

**Y**

yellow zone, 7, 12

**Z**

zone number, 8  
zone selection, 9

## **Warranty**

This equipment is warranted to be free from defects of material and workmanship. It is sold subject to our mutual agreement that the liability of the seller is to replace or repair this equipment at its factory, provided that the equipment is returned with transportation prepaid within the warranty period, which starts when the unit is purchased. The warranty period is one (1) year for the display and its processor, and two (2) years for other components of the unit.

The purchaser agrees that the seller assumes no liability under any circumstances for consequential damages resulting from use of this equipment or from improper handling or packaging of shipments returned to the factory.

Components which wear or which are damaged by misuse are not warranted. These include contact points, fuses, electromechanical relays, and triacs. Units which have been modified by a customer in any way are not warranted.

Other than those expressly stated herein, there are no other warranties of any kind, express or implied, and specifically excluded but not by way of limitation, are the implied warranties of fitness for a particular purpose and merchantability.

It is understood and agreed the seller's liability whether in contract, in tort, under any warranty, in negligence or otherwise shall not exceed the return of the amount of the purchase price paid by the purchaser and under no circumstances shall seller be liable for special, indirect, incidental or consequential damages. The price stated for the equipment is a consideration in limiting seller's liability. No action, regardless of form, arising out of the transactions of this agreement may be brought by purchaser more than two years after the cause of action has accrued.

Seller's maximum liability shall not exceed and buyer's remedy is limited to either (i) repair or replacement of the defective part or product, or at seller's option (ii) return of the product and refund of the purchase price, and such remedy shall be buyer's entire and exclusive remedy. The specifications put forth in this manual are subject to change without notice.