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Rigid Anaerobic and Hypoxic Temperature Calibrations Instructions

Heated Anaerobic and Hypoxic Chamber Temperature With the Watlow 999 controller

Part 1. Over view of the Watlow controller and controls.

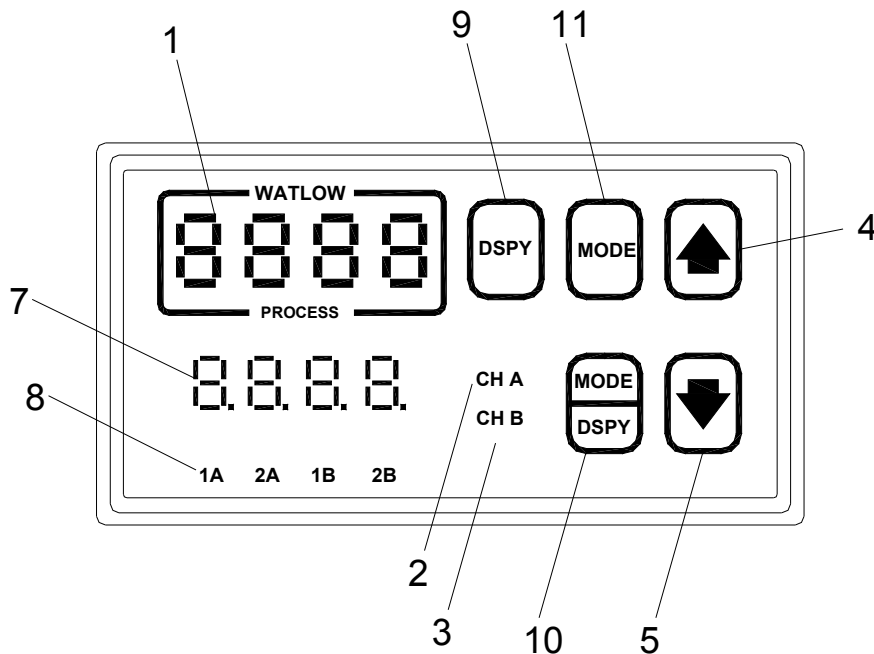
Part 2. Covers the temperature calibration.

WARNING: ONLY CHANGE THE SETTINGS THAT THE INSTRUCTIONS CALL FOR. CHANGING ANY OTHER SETTINGS COULD CAUSE THE CONTROLLER TO MALFUNCTION.

Part 1 over view of the waltow controller and controls.

The watlow controller controls the temperature and humidity of the chamber. There are 4 menus that have to be entered to calibrate the controller. The following sections will describe the front panel functions, menus, access, moving thru the menus and changing values.

A. Keys and Displays



1. **Upper Display:** Indicates either actual process value for channel A or channel B, operating prompt values or error codes
2. **CH A indicator Lights:** When lit, if the Ch B light is not on. The channel A process value is shown in the upper display and channel A set point value is shown in the lower display. When both CH A and CH B

- lights are on. The upper display shows the channel A process value and the lower display shows the channel B process value.
3. **CH B indicator Lights:** When lit, if the Ch A light is not on, the channel B process value is shown in the upper display and channel B set point value is shown in the lower display . When both CH A and CH B lights are on. The upper display shows the channel A process value and the lower display shows the channel B process value.
 4. **Up-Key:** Increases the value of the displayed prompt. A light touch increases the value by one. Holding the key down increases the value at a rapid rate. New data does not take effect for five seconds or until the Mode or Display key is pressed.
 5. **Down-arrow Key: Up-arrow Key:** Decreases the value of the displayed prompt. A light touch decreases the value by one. Holding the key down decreases the value at a rapid rate. New data does not take effect for five seconds or until the Mode or Display key is pressed.
 6. **Up-arrow + Down-arrow Keys:** Press simultaneously gains access to menus.
 7. **Lower Display:** Indicates the channel A or channel B set point, or channel B process value, menu prompts, or alarm codes,
 8. **1A,2A,1B,2B Indicator Lights:** These light indicate when output 1A,2A,1B or 2B is active.
 9. **Display Key:** The Display key is used to select which channel A and/or B parameter to displayed.
 10. **Auto/Man Key:** Used to switch from auto to manual control or vice versa. Also used to reset alarm.
 11. **Mode Key:** Steps through the menus. New data is entered once the Mode key is pressed.

B. Menus

Setup, Factory, “InPt” and “LOC” are the menus that have to be entered to calibrate the controller. The “Setup” and “Factory” menus are the main menus. “InPt” menu is a sub menu of the Setup menu and “LOC” menu is a sub menu of “Factory” menus.

C. Access menus

Up-arrow + Down-arrow Keys: Press simultaneously for three seconds to enter the Setup Menu. Continue to press both keys for another three seconds to enter the Factory Menu .

D. Moving though the sub menus

Use the mode key to move though the menus

E. Changing Setting Values

Use the up or down arrow keys to change the values of the settings.
Or moving though the main menus. (locating sub menus)

Part 2) Temperature Calibration

Equipment needed:

A trusted temperature probe.

Warning: While in the menus the output of the controller are turned off.

1. Place your temperature reference at the location in the chamber that you require the most accurate temperature control. This location should not be on the floor, wall of the chamber or directly in front of the heater.

2. TO UNLOCK THE CONTROLLER.

Press and hold the up and down key simultaneously for 6 second the bottom display will display “Fcty” then release both keys. Use the up or down arrow key to locate the menu “PLOC” then use the Mode key to scroll down key to “InPt” setting use the up or down arrow key to change the setting to “nonE”. Press the Display button. This will unlock the “InPt” menu.

3. Temperature switch on the front panel must be on.

4. Set point (watlow controller) should be set at the temperature at which the chamber is used at.

5. Let chamber reach the set point temperature and stabilize for 1 or 2 hours. (note this time varies for the size of the chamber and if chamber is at ambient temperature.

6. Take the difference between your temperature reference and the process value on the controller.

7. TO CHANGE THE CALIBRATION OF THE CHAMBER.

Press and hold the up and down key simultaneously for 3 second the bottom display will display “SET” then release both keys. Use the up or down arrow key to locate the menu “InPt” then use the MODE key to scroll down to “CAL1” setting, use the up or down arrow key to change the setting to add or subtract the value that was calculated in step 4. ****If the actual temp in the chamber is 32 but the process value on the watlow controller reads 37 take the 5 degree difference and subtract that number from the “CAL1” setting. This will increase the actual temperature in the chamber***.*

Press the Display button to return to the main screen.

8. Let chamber stabilize for 30 minutes. Repeat steps 4 & 5 if needed.

9. Locking the controller (strongly recommended).

Press and hold the up and down key simultaneously for 6 second the bottom display will display “Fcty” then release both keys. Use the up or down arrow key to locate the menu “PLOC” then use the Mode key to scroll down key to “InPt” setting use the up or down arrow key to change the setting to “rEAd”. Press the Display button. This will unlock the “InPt” menu.