

The Zesta **BENCHTOP CONTROLLER** is a precision microprocessor-based, zero-cross firing, Single or Dual zone temperature control panel. This control panel is designed to reach a pre-determined set point in the shortest time possible, with minimum overshoot.

The Benchtop Controller comes pre-programmed by Zesta Engineering depending on the feature selection, and a configuration parameter list is supplied with the unit. Certain parameters, such as maximum operator set point, may need to be fine-tuned to meet your process requirements. In the next sections you will find guidelines on accessing the Setup Page in order to reach the necessary parameters and make the adjustments.

CONNECTION GUIDE

INPUT	CONNECTOR
Process Temperature Sensor Controller 1	Input 1
Process Temperature Sensor Controller 2 (selected models only)	Input 2
Limit Temperature Sensor (selected models only)	Input 2

OUTPUT	CONNECTOR
Heater Load Controller 1	Output 1
Heater Load Controller 2 (selected models only)	Output 2

**CAUTION: USE A PROPER TEMPERATURE SENSOR TYPE. INCORRECT SENSOR TYPE CAN LEAD TO DAMAGE OR INJURY!
DO NOT CONNECT A HEATER LOAD EXCEEDING THE PANEL RATING! RESISTIVE LOADS ONLY!**

Quick Start your process

➤ **To start your process using pre-programmed settings:**

- STEP 1:** **Off/On** rocker switch must be on Power **Off** position.
- STEP 2:** Plug the Benchtop controller power cord plug to 120Vac, 50/60Hz, single-phase power source.
- STEP 3:** **Turn On** power switch located on the front of the control panel.
Temperature controller(s) will turn on displaying the Process temperature and Set point values.
- STEP 4:** Adjust the set point to required process temperature by pressing the **+ or -** key.
The control panel will now function with default values.

➤ **To optimize the process response by auto-tuning the PID parameters of your Benchtop Controller:**

- STEP 1:** Adjust your process set point using **+ or -** keys to a temperature the tuning will be performed at.
- STEP 2:** Press **Right** key to enter Operations menu. Using **-** key, select **Autotune** menu. Press **Right** key to enter.
- STEP 3:** Select **YES** to initiate the tuning process. Confirm by pressing **Right key**. Press **Home** key to return to main screen.
The controller will indicate active tuning via **tUn1** indicator.
The process will climb up and down around set-point calculating new PID values.
Once completed, the **tUn1** indicator will go off, and the new PID values will be stored automatically.

Adjusting the Benchtop Controller configuration

The Benchtop Controller is pre-set to degrees Celsius units, the minimum/maximum operator set point range of 0°C – 500°C, and a deviation alarm of 10°C. Selected models with integrated Limit Controller are additionally programmed for a High Side Limit Set Point of 500°C. If your process requires different parameter configuration, follow the steps below to perform the adjustments.

NOTE: You may also use EZ-Link Mobile App to connect and configure your controller via Bluetooth. Available on Google Playstore.

➤ **To switch between Celsius and Fahrenheit temperature units:**

- STEP 1:** Enter the Operations Page by pressing **Right** key
- STEP 2:** Navigate down with **-** key. Select **Setup** menu and enter with **Right** key.
- STEP 3:** Using **+ or -** Keys, navigate to **Global** menu.
- STEP 4:** Select the **Display Units** menu. Press the **Right** key to enter.
- STEP 5:** Using **+ or -** keys, adjust the selection between °C and °F.
- STEP 6:** Confirm with a **Right** key.
- STEP 7:** Return to Home Page by pressing **Home** key.

➤ **To adjust minimum / maximum operator set point range:**

- STEP 1:** Enter the Operations Page by pressing **Right** key.
- STEP 2:** Navigate down with **-** key. Select **Setup** menu and enter with **Right** key.
- STEP 3:** Using **+ or -** keys, navigate to **Control Loop** menu.
- STEP 4:** Navigate using **+ or -** keys until **Minimum Set Point** is selected. Press the **Right** key to enter.
- STEP 5:** Adjust the **Minimum Set Point** value using **+ or -** keys. Press the **Right** key to move to next parameter.
- STEP 6:** Adjust the **Maximum Set Point** value using **+ or -** Using **+ or Down** keys, adjust the value.
- STEP 7:** Press the **Right** key to move to next parameter.
- STEP 8:** Return to Home Page by pressing **Home** key.

➤ **To setup an alarm:**

- STEP 1: Enter the Operations Page by pressing **Right** key.
- STEP 2: Navigate down with – key. Select **Setup** menu and enter with **Right** key.
- STEP 3: Using + or - keys, navigate to **Alarm** menu. Press the **Right** key to enter.
- STEP 4: Using + or - keys, select from 1 to 4 for Alarm Instance and enter by pressing the **Right** key.
- STEP 5: Identify and adjust the following parameters using **Up** or **Down** Keys:

Parameter Name	Default setting	Description
Alarm Type	Deviation	Select between Process Alarm and Deviation Alarm *
Alarm Hysteresis	1°C	Set the alarm tolerance band before alarm condition may clear
Alarm Sides	High	Select which side or sides will trigger this alarm
Alarm Low Set Point	N/A**	Set the low process value that will trigger this alarm **
Alarm High Set Point	10°C	Set the high process value that will trigger this alarm **
* NOTE: Refer to Watlow PM PLUS PID/Integrated User Manual for more information.		
** NOTE: The parameter visibility is dependent on the Alarm Sides (A.Sd) setting.		

- STEP 6: (Optional) If another Alarm needs to be programmed, press **Left** key once, and repeat from **Step 4** above.
- STEP 7: Return to Home Page by pressing **Home** Key.

➤ **To adjust your limit controller parameters (Selected Benchtop Controller models only):**

The Limit controller is a safety device which helps in preventing a runaway condition by the means of de-energizing the load circuit. The Benchtop Controller is programmed by default for High Side Limit, 0-500°C set point range and 100°C set point setting.

- STEP 1: Enter the Operations Page by pressing **Right** key.
- STEP 2: Navigate down with – key. Select **Setup** menu and enter with **Right** key.
- STEP 3: Using + or - Keys, navigate to **Limit** menu.
- STEP 4: Enter the Limit Menu by pressing **Right** key.
- STEP 5: Identify and adjust the following parameters using + or - keys:

Parameter Name	Default setting	Description
Limit Sides	High	Selects which side or sides of the process value will be monitored.
Maximum Set Point Range	500°C	Set the high end of the limit set point range
Minimum Set Point Range	0°C	Set the low end of the limit set point range
Limit High Set Point	100°C	Set the high process value that will trigger the limit *
Limit Low Set Point	N/A*	Set the low process value that will trigger the limit *
* NOTE: Depending on the selected setting of Limit Sides, the High or Low Set Point parameter may not be displayed.		

- STEP 6: Return to Home Page by pressing **Home** Key.

➤ **To back-up controller settings:**

- STEP 1: Enter the Operations Page by pressing **Right** key.
- STEP 2: Navigate down with – key. Select **Setup** menu and enter with **Right** key.
- STEP 3: Using + or - keys, navigate to **Global** menu. Press the **Right** key to enter.
- STEP 4: Using + or - keys, select **Save Settings As**. Press the **Right** key to enter.
- STEP 5: Using + or - keys, select **User Set 1**.
- STEP 6: Press the **Right** key to confirm and move to next menu.
The settings now are saved to User Set 1 memory slot.
- STEP 7: Return to Home Page by pressing **Home** key.

➤ **To restore controller settings:**

NOTE: Restoring controller's settings will override any currently present parameters!

- STEP 1: Follow the Step 1 - 3 above to enter the **Global** menu
- STEP 2: Using + or - keys, select **Restore Settings From**. Press the **Right** key to enter.
- STEP 3: Using + or - keys, select the User Set to be restored from.
- STEP 4: Press the **Right** key to confirm and move to next menu.
- STEP 5: Return to Home Page by pressing **Home** key.

For more information about each parameter function, please refer to
Watlow EZ-Zone ® PM PLUS Series **PID/Integrated User Manual** for Benchtop Controllers

Available at:

www.zesta.com



OR

www.watlow.com

