ZESTA BENCHTOP CONTROLLER

Equipped with Watlow EZ-Zone ® PM Series Controller

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 **Up or Down** 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 **Up** or **Down** keys to a temperature the tuning will be performed at.
STEP 2: Press repeatedly **Green Key** until the **AUT** is visible. Using **Up** key, select **YES** to initiate the tuning process.
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.

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

STEP 1: Enter the Setup Page by holding the **Up and Down** keys for 6 seconds. **Ai SET** should be visible.
NOTE: If **Ai OPER** is present, hold the **Up and Down** key for additional 3 seconds, or hold **Infinity / Reset*** Key and repeat this step.
STEP 2: Using **Up** or **Down** Keys, navigate to **GLBL** (Global Menu).
STEP 3: Cycle the parameters using **Green Key** until the **C_F** (Celsius or Fahrenheit Display Units) is visible.
STEP 4: Using **Up** or **Down** keys, adjust the selection.
STEP 5: Confirm with a **Green Key**.
STEP 6: Return to Home Page by holding the **Infinity / Reset*** Key.

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

STEP 1: Enter the Setup Page by holding the **Up and Down** keys for 6 seconds. **Ai SET** should be visible.
NOTE: If **Ai OPER** is present, hold the **Up and Down** key for additional 3 seconds, or hold **Infinity / Reset*** Key and repeat this step.
STEP 2: Using **Up** or **Down** Keys, navigate to **LOOP** (Control Loop Menu).
STEP 3: Cycle the parameters using **Green Key** until the **LSP** (Minimum Set Point) or **HSP** (Maximum Set Point) is visible.
STEP 4: Using **Up** or **Down** keys, adjust the value.
STEP 5: Confirm with a **Green Key**.
STEP 6: Return to Home Page by holding the **Infinity / Reset*** Key.

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➢ **To setup an alarm:**

STEP 1: Enter the Setup Page by holding the **Up and Down** keys for 6 seconds. **Ai SET** should be visible.
NOTE: If **Ai OPER** is present, hold the **Up and Down** key for additional 3 seconds, or hold **Infinity / Reset*** Key and repeat this step.
STEP 2: Using **Up** or **Down** Keys, navigate to **ALM** (Alarm Menu).
STEP 3: Using **Up** or **Down** Keys, select from 1 to 4 for Alarm Instance and confirm with **Green Key.**
STEP 4: Pressing the **Green Key** cycles through available parameters in the Alarm Instance Menu
Identify and adjust the following parameters using **Up** or **Down** Keys:

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

STEP 5: (Optional) If another Alarm needs to be programmed, press **Infinity / Reset*** once, and repeat from **Step 3** above.
STEP 6: Return to Home Page by holding the **Infinity / Reset*** 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 Setup Page by holding the **Up and Down** keys for 6 seconds. **Ai SET** should be visible.
NOTE: If **Ai OPER** is present, hold the **Up and Down** key for additional 3 seconds, or hold **Infinity / Reset*** Key and repeat this step.
STEP 2: Using **Up** or **Down** Keys, navigate to **LIM** (Limit Menu).
STEP 3: Enter the Limit Menu by pressing **Green key**.
Pressing the **Green Key** cycles through available parameters in the Limit Menu.
STEP 4: Identify and adjust the following parameters using **Up** or **Down** Keys:

Parameter Name	Parameter Indication	Description
Limit Sides	LSd	Selects which side or sides of the process value will be monitored.
Maximum Set Point Range	SP.Lh	Set the high end of the limit set point range
Minimum Set Point Range	SP.Ll	Set the low end of the limit set point range
Limit High Set Point	LhS	Set the high process value that will trigger the limit *
Limit Low Set Point	LLS	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.		

➢ **To back-up controller settings:**

STEP 1: Enter the Setup Page by holding the **Up and Down** keys for 6 seconds. **Ai SET** should be visible.
NOTE: If **Ai OPER** is present, hold the **Up and Down** key for additional 3 seconds, or hold **Infinity / Reset*** Key and repeat this step.
STEP 2: Using **Up** or **Down** Keys, navigate to **GLBL** (Global Menu).
STEP 3: Cycle the parameters using **Green Key** until the **USr.S** (User Settings Save) is visible.
STEP 4: Using **Up** or **Down** keys, select **Set 1**.
STEP 5: Confirm with a **Green Key**.
The settings now are saved to User Set 1 memory slot.
STEP 6: Return to Home Page by holding the **Infinity / Reset*** Key.

➢ **To restore controller settings:**

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

STEP 1: Follow the Step 1 and 2 above to enter the **GLBL** (Global) menu
STEP 2: Cycle the parameters using **Green Key** until the **USr.r** (User Settings Restore) is visible.
STEP 3: Using **Up** or **Down** keys, select the User Set to be restored from.
STEP 4: Confirm with a **Green Key**.
STEP 5: Return to Home Page by holding the **Infinity / Reset*** Key.

* **Reset** Key is used on selected models with integrated Limit Controller

For more information about each parameter function, please refer to
Watlow EZ-Zone ® PM Series **PID User Manual** for Benchtop Controllers without integrated Limit
Watlow EZ-Zone ® PM Series **Integrated User Manual** for Benchtop Controllers with integrated Limit
Available at:

www.zesta.com

OR

www.watlow.com

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