ZESTA BENCHTOP CONTROLLER

Equipped with Zesta ZEL-C 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 or alarm high/low set points, 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: Hold the **Enter Key** until the **A-t** is visible, then release key.

STEP 3: Press and hold the **Enter Key** for 5 seconds to initiate the tuning process.
The controller will indicate active tuning via **AT** indicator flashing.
The process will climb up and down around set-point calculating new PID values.
Once completed, the **AT** 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 Limit Controller (ZEL-L91) are additionally programmed for a High Side Limit Set Point of 100°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 **Enter Key** for 5 seconds until **SET and bASE** is visible.
NOTE: If **HAnD, A-t or CALi** is present, press and hold the **Enter Key**, until **SET** is visible.
STEP 2: Cycle the parameters using **Enter Key** until the **UNIT** (Celsius or Fahrenheit Display Units) is visible.
STEP 3: Using **Up** or **Down** keys, adjust the selection.
STEP 4: Return to Home Page by pressing the **R Key** R.

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

STEP 1: Enter the Setup Page by holding the **Enter Key** for 5 seconds until **SET** is visible.
NOTE: If **HAnD, A-t or CALi** is present, press and hold the **Enter Key**, until **SET and bASE** is visible.
STEP 2: Cycle the parameters using **Enter Key** until the **SP1L** (Low Set Point Range) or **SP1H** (High Set Point Range) is visible.
STEP 3: Using **Up** or **Down** keys, adjust the selection.
STEP 4: Return to Home Page by pressing the **R Key** R.

➢ **To setup an alarm:**

The Zesta Benchtop Controller equipped with ZEL C series is pre-programmed on default for Alarm 1 Deviation High and Alarm 2 Deviation Low. Default values are Alarm 1 Deviation High +10°C, Alarm 2 Deviation Low -10°C. To adjust these values, follow steps 5 and 6.

STEP 1: Enter the Setup Page by holding the **Enter Key** for 5 seconds until **SET** is visible.

NOTE: If **HAnD, A-t or CALi** is present, press and hold the **Enter Key**, until **SET and bASE** is visible.

STEP 2: Use **Up** or **Down** keys to navigate to alarm menu **ALRM**

STEP 3: Cycle the parameters using **Enter Key**.
Identify and adjust the following parameter using **Up** or **Down** Keys:

Parameter Name	Parameter Indication	Description
Alarm Function	A**X**FN*	Select between none, dwell timer, deviation alarm, process alarm
Alarm Operation Mode	A**X**MD*	Select between normal, latching, holding or latching and holding
Alarm Hysteresis	A**X**HY*	Set the alarm tolerance band before alarm condition may clear
Alarm Failure Transfer	A**X**FT*	Select Alarm State when sensor failure is detected
* **X** marker refers to alarm number NOTE: Refer to Zesta ZEL-C Series User Manual for more information about configuring alarms.		

STEP 4: Return to Home Page by pressing the **R Key** R.

STEP 5: Press repeatedly **Enter Key** until **AXSP* (for process alarm)** or **AXDV* (for deviation alarm)** is visible.

STEP 6: Adjust the Alarm Set Point using **Up** or **Down** Keys.

➢ **To adjust your ZESTA ZEL-L91 limit controller parameters (*Selected Benchtop Controller models only*):**

The Zesta ZEL-L91 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: Ensure the **LOCK** indicator is **OFF**. If **LOCK** indicator is **ON**, hold the **RESET** RESET Key for 4 seconds.

STEP 2: Enter the Setup Page by holding the **Enter Key** for 4 seconds until **INPT** is visible.

STEP 3: Cycle the parameters using **Enter Key**.
Identify and adjust the following parameters using **Up** or **Down** Keys:

Parameter Name	Parameter Indication	Description
Process Unit	UNIT	Select between degrees Celsius or Fahrenheit.
Output 1 Function	OUT1	Select between High, Low, and High/Low limit control
Minimum High SP Range	HSP.L	Set the low end of the High Side limit set point range *
Maximum High SP Range	HSP.H	Set the high end of the High Side limit set point range *
Minimum Low SP Range	LSP.L	Set the high end of the Low Side limit set point range *
Maximum Low SP Range	LSP.H	Set the low end of the Low Side limit set point range *
* NOTE: Depending on the selected setting of Output 1 Function (OUT1), the High or Low Set Point parameter may not be displayed.		

STEP 4: Return to Home Page by pressing the **Reset Key** RESET.

STEP 5: Press repeatedly **Enter Key** until **HSP1** (High Limit Set Point) or **LSP1** (Low Limit Set Point) is visible.

STEP 6: Adjust the High or Low Limit Set Point using **Up** or **Down** Keys.

➢ **To clear triggered limit condition on your ZESTA ZEL-L91 limit controller (*Selected Benchtop Controller models only*):**

STEP 1: Ensure the process is in a safe condition and the limit temperature sensor is connected.
NOTE: If limit sensor is disconnected during normal operation, limit condition will be triggered.
Sensor must be reconnected and the limit condition must be reset to resume operation.

STEP 2: Reset the limit controller latch by pressing the **Reset Key** RESET.

For more information about each parameter function, please refer to
Zesta ZEL-C Series **User Manual** for Benchtop Controllers without Limit Controller
Zesta ZEL-C Series **User Manual** and Zesta ZEL-L91 **User Manual** for Benchtop Controllers with Limit Controller
Available at:

www.zesta.com