MKII Temperature Controller
PART#:007919

NEMA Protection Rating – Housing	IP20
NEMA Protection Rating – Display	IP65
Power Supply	110V AC 60Hz (10/16amp)
Fire Protection Rating	V-0
Power Consumption	<3W
Display Range	-45 to 120C
Accuracy	+/- 0.5C
Resolution	0.1C

ICON LEGEND

ICON	MODE	FUNCTION
❄	On	Cooling Relay On
❄	Flashing	Cooling Relay Delayed Start
♨	On	Heating Relay On
⚠	On	Alarm
^{o}C ^{o}F	On	Temperature Unit

SETTING THE SET POINT

1. Push and immediately release the SET key. The display will show the set point value.
2. Use the up and down arrow keys to change the set point.
3. Wait 6 seconds to return to the home screen.

RESUME FACTORY DEFAULT SETTING

Push the down key for 1 second. While holding down the down key also push the up key at the same time. Once the up and down key are both depressed then release the down key and keep holding the up key for a further 6 seconds.

CHANGING THE ADVANCED SETTINGS

For more advanced users the MKII temperature controller has a significantly advanced settings menu that can be accessed. The advanced settings allow further instructions to be given to the controller such as different cooling start delay times, tighter temperature differential settings, distillation control or even sequential temperature settings. Some of the advanced settings are show in the table below:

	Function Setting	Range	Default
E3	Temp differential	0.1 ~ 10C	1C
E4	Cooling Start delay at power on	0 ~ 10min	00
E5	Cooling Start delay	0 ~ 10min	02
E6	Calibration offset setting	-20C ~ +20C	00
t1	Delay time between heating and cooling turning on	0 ~ 30min	05
H1	High temp alarm	H2 ~ 120C	120
H2	Low temp alarm	-45C ~ H1	-45
H5	Alarm start delay at power on	00 ~ 180min	00
H6	Alarm delay time	00 ~ 180min	00
C1	Fahrenheit or Centigrade	00=^{o}C 01=^{o}F	00
d1	Advanced function mode	00=Normal	00
	(EXPLAINED IN DETAIL BELOW)	01=Sequential 02=Distillation	
d2	Time Unit	00=Second 01=Minute 02=Hour 03=Day	01
d3	Time allocated to each sequential step	00 ~ 200	01

SEQUENCIAL TEMP SETTINGS BELOW BECOME VISABLE WHEN YOU SET "d1" to "01"

F1	Sequential Temp 1	-40 ~ +120°C	20C
F2	Sequential Temp 2	-40 ~ +120°C	20C
F3	Sequential Temp 3	-40 ~ +120°C	20C
F4	Sequential Temp 4	-40 ~ +120°C	20C
F5	Sequential Temp 5	-40 ~ +120°C	20C
F6	Sequential Temp 6	-40 ~ +120°C	20C
F7	Sequential Temp 7	-40 ~ +120°C	20C
F8	Sequential Temp 8	-40 ~ +120°C	20C
F9	Sequential Temp 9	-40 ~ +120°C	20C
F10	Sequential Temp 10	-40 ~ +120°C	20C
F11	Sequential Temp 11	-40 ~ +120°C	20C
F12	Sequential Temp 12	-40 ~ +120°C	20C

1. To access the advanced settings (above) push the SET key for 6seconds until E3 flashes.
2. Use the arrow keys to navigate to the advanced setting and then use set key to select the advanced setting then use the arrow key to change the advanced setting.
3. After the advanced settings have been set use the set key to return to the advanced setting display or just wait 6 seconds to return to the home screen. Alternatively if you would like to return to the home screen quickly simply press the "X" button to instantly return to the home screen.

d1 ADVANCED FUNCTION MODE

The advanced function mode has three different settings:
d1= 00 – This is just normal operation

d1=01 – Sequential Mode

In sequential mode a series of set temperatures can be setup so the temperature control will cycle through a number of different set temperatures before returning to the original set temp. This can be particularly useful if you wanted to set a fermentation temperature profile so that the temperature would increase by 2C every 2 days then crash chill and dropped the temperature down to 0C at the end. To set up sequential mode:

1. Set d1 to 01
2. Navigate to d2 and set the time unit to either minutes, seconds, hours or days.
3. Navigate to d3 and set the time for each sequential step. For example if d2 has been set to 01 (for minutes) and you set d3 to 15. Then each sequential set temperature will last for 15 minutes before moving to the next sequential set temperature.
4. Navigate from F1 to F12 and set the temperature for each sequential stage.

5. If you do not want to use any of the sequential stages simply set the F1~F12 setting to "no". This can be done by pressing the down arrow until you get to -40C then press the down arrow again and it will display "no". In the "no" setting the sequential step will be skipped. If the F1~F12 setting is set to "no" the controller will jump to the next programmed sequence.
6. If at any point you need to re-start the sequential mode from F1 simply press the down arrow and set key at the same time for 6 seconds and the sequential mode will start from the beginning.
7. Once the final F12 set temperature has finished the controller will:
   A) Sound an alarm
   B) Turn off sequential mode
   C) Return to the original set temperature before sequential mode was selected
   If you simply press any key on the display the alarm will turn off and the controller will return back to normal operation.

NOTE: Wile in sequential mode the display will cycle between the probe temperature and the "F1~F12" sequential stage. If at any time you would like to see the set temperature for that sequential stage simply press the "X" key and the sequential set temperature will be displayed.

d1=02 – Distillation Mode
When distilling alcohol or other liquids it can take several hours. Digital temperature controllers such as this one can help automate the process so you don't need to monitor the still so closely and the controller can turn off the still and pump when the distillation process is finished. When in distillation mode the MKII controller will only cycle the heating relay once. So for instance if you set the temperature to 80C the controller will turn on the heating relay until the temperature gets up to 80C. Once it reaches 80C it will sound the alarm and turn off the heating relay until it is manually reset.

If you did not use distillation mode the temperature controller would turn on the boiler and the temperature would only go up to 80C. However once the boiler cools down the controller would turn the boiler back on and the temperature would keep getting pushed up to 80C so the boiler would keep getting cycled on and off repeatedly this issue highlights the need for the distillation mode.

PROBE FAULT CODE

The controller can display fault codes if the probe resistance is outside of normal operating parameters. If this happens the fault codes below will read on the display.

CODE	REASON	OPERATION
Er1	Probe disconnected/short-circuit	Maintain Normal Operation
Er2	Probe Temperature Too Low	Maintain Normal Operation
Er3	Probe Temperature Too High	Output Relays Bot Turn Off