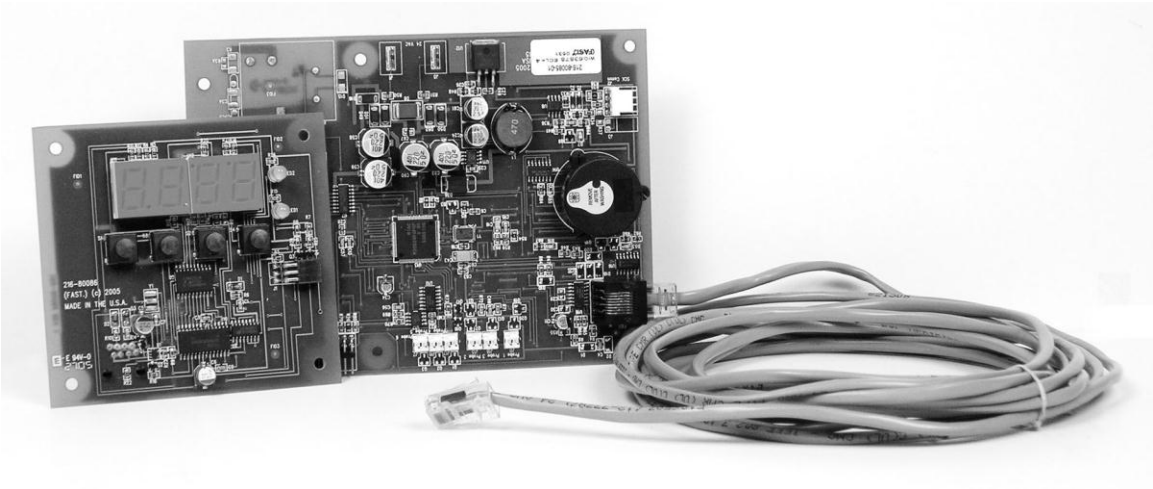
KITCHEN BRAINS

User Instructions for the
ZAC-6 Multi-Zone Control



1.0 GENERAL

1.1 Requirements

1.1.1 15 foot cable to connect the two control boards.

1.1.2 Drives six off -board Solid State Relays (supplied by the customer).

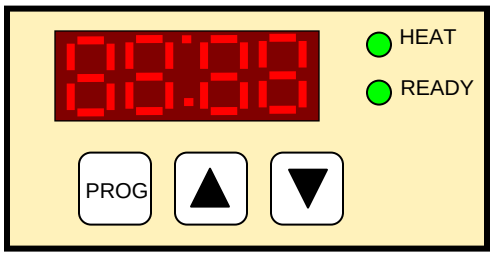
1.2 Inputs

1.2.1 Six 1 KOhm RTD. All RTD Probes connections use a 2-pin Amp MTA-100 connector (or equivalent).

1.2.2 One 24 Vac, 50/60 Hz, 1 phase power input from transformer. Tolerance of +/- 15%. 0.25" Faston connections.

1.3 Control Layout

1.3.1 The control layout shall be as shown below:



2.0 OPERATIONAL DESCRIPTION

2.1 Control shall immediately start to preheat the unit.

2.2 During preheat and normal operation the control display will cycle through the actual temperature of each channel followed by any fault messages. The channels will be designated F (front), C (center) and b (back). The control will display the average temperature of the two zones on a channel. As an example the control will scroll (one second display time each): F278 – C283 – b000 – Lo_F – Hi_C – Pr_b

2.3 The Heat LED will indicate that the heat output for the displayed channel is active. Therefore if the temperature for the center channel is being displayed (C275) and the heat output for this channel is active, the heat LED will be on.

2.4 Control will light the Ready LED when all zones on all channels have reached the setpoint temperature once. The control will continue to display the Ready LED as long as all zones stay within +/- 10 ºF of the setpoint temperature.

2.5 The control will stay in preheat mode for a maximum of 45 minutes. At 45 minutes the control will display fault messages for any channels that have not reached temperature.

2.6 Pressing the ▲ key will cause the control to cycle through the set point channel temperatures. The control will display:
SEtF – 275F – SEtC – 275F – Setb – 275F
At this point the control will return to displaying actual channel temperatures.

2.7 Pressing the ▼ key will cause the control to cycle through the actual individual zone temperature follow by any zone related fault codes. The zones will be designated L (left) and r (right). As an example:
CHFL – 275 - CHFr – 280 - CHCL – 270 - CHCr – 274 - CHbL – 281 - CHbr – 279 - HIFr – LOCL – PRFL .
At this point the control will return to displaying actual channel temperatures.

2.8 Control shall default to the last temperature set points if power is removed from the system.

3.0 PROGRAMMING

3.1 Press and hold the PROG button for 3 seconds to enter programming.

3.2 At this point the control will display CodE and the user will need to enter a programming code.

3.3 The ▲ and ▼ keys are used to increment/decrement parameters.

3.4 The PROG key is used to enter the parameter and move to the next parameter.

3.5 The control will automatically exit programming and save the settings after the last parameter is entered.

3.6 The following parameters will be programmable.

- 3.6.1 Number of Channels – The value for this parameter will be 1, 2 or 3. The default value will be 3.
- 3.6.2 Temperature Units – The value for this parameter will be F (Fahrenheit) or C (Celsius). The default value will be F.
- 3.6.3 Front Channel Setpoint Temperature – This setting applies to both zones on a channel. The range on this parameter will be 150 to 320 F. The default value will be 275 F
- 3.6.4 Center Channel 2 Setpoint Temperature – See Front Channel Setpoint Temperature above.
- 3.6.5 Back Channel 3 Setpoint Temperature – See Front Channel Setpoint Temperature above.
- 3.6.6 Front Channel High Temperature Alarm – This is an absolute temperature at which a high temperature alarm will occur. The range on this parameter will be 300 to 350 F. The default value will be 300 F
- 3.6.7 Center Channel High Temperature Alarm – See Front Channel High Temperature Alarm above
- 3.6.8 Back Channel High Temperature Alarm – See Front Channel High Temperature Alarm above

3.6.9 Front Channel Low Temperature Alarm – This is an absolute temperature at which a low temperature alarm will occur. The range on this parameter will be 150 to 300 F. The default value will be 300 F

3.6.10 Center Channel Low Temperature Alarm – See Front Channel Low Temperature Alarm above

3.6.11 Back Channel Low Temperature Alarm – See Front Channel Low Temperature Alarm above

3.7 Operator shall be able to change temperature parameters in 1 ºF increments. The set point for each channel will apply to both zones. Therefore you will only have three temperature settings.

3.8 Unit shall automatically exit programming if no key is pressed in a one minute period. The control will begin controlling at the new temperature upon exit.

4.0 FAULT CONDITIONS

4.1 In the event of a fault the control shall continue to control the channels that are not currently in a fault condition. A fault in a single zone will be recognized by the control as a fault on both zones on a channel.

4.2 Over Temperature Fault. An over temperature fault occurs when the control senses that the temperature of any zone on any channel has exceeded a programmable high limit temperature. This temperature will be programmable for each channel. When this condition is detected the display will show HI X (where X is the channel (F, C, b)) as described in section 2.5 and the buzzer will sound for a 1 second pulse every 30 seconds. The operator can cancel the alarm with the push of any button. The audible alarm will re-activate every 20 minutes until the alarm condition is fixed. The control shall remove power to both heaters on the channel in a fault condition. This fault can self-clear if the fault condition corrects itself.

4.3 Under Temperature Fault. An under temperature fault occurs when either of the following conditions occur:

4.3.1 The control senses that the temperature of any zone on any channel has fallen below a programmable low limit temperature. This temperature will be programmable for each channel.

4.3.2 The control detects that the temperature of any zone on any channel did not reach the set point temperature by the end of the preheat cycle.

When this condition is detected the display will show LO X (where X is the channel (F, C, b)) as described in section 2.5 and the buzzer will sound for a 1 second pulse every 30 seconds. The operator can cancel the alarm with the push of any button. The audible alarm will re-activate every 20 minutes until the alarm condition is fixed. This fault can self-clear if the fault condition corrects itself.

4.4 Sensor Failure. A sensor failure occurs when the control senses a short circuit or open circuit in the sensor circuit of any zone on any channel. When this condition is detected the display will show PR X (where X is the channel (F, C, b)) as described in section 2.5 and the buzzer will sound for a 1 second pulse every 30 seconds. The operator can cancel the alarm with the push of any button. The audible alarm will re-activate every 20 minutes until the alarm condition is fixed. The control will display 000 for the temperature of the channel in fault condition. The control shall remove power to both heaters on the channel in a fault condition. This fault can self-clear if the fault condition corrects itself.

Replacement Parts List

Quantity	Kitchen Brains™ Part No.	Description
1	233-61063-01	Main Board
1	233-61063-02	Display Board
1	213-50753	Communication Cable 15 ft.
6	140-60052-01	1K RTD

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Specifications subject to change without notice.

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WARRANTY
Kitchen Brains warrants all new timers, computers, and controllers for 1 year from the date of purchase including computers, controllers, and timers. Kitchen Brains warrants all other items for a period of 90 days unless otherwise stated at the time of purchase.

PATENTS
The products manufactured by Kitchen Brains are protected under one or more of the following U.S. Patents:
5,331,575 5,539,671 5,711,606 5,723,846
5,726,424 5,875,430 6,142,666 6,339,930
6,401,467 6,581,391 7,015,433 7,650,833
7,877,291 8,060,408
Plus foreign patents and patents pending.
Plus licensed patent 5,973,297

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