



BBQ GURU WIRELESS ProCom 4 USER GUIDE
 Rev.29 for V1.9 & V2.0 of the software

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1.SAFETY WARNINGS

INSTALLATION / SAFETY INFORMATION:

READ AND UNDERSTAND THIS USERGUIDE COMPLETELY BEFORE INSTALLING OR USING THIS PRODUCT!!




WARNING: FIRE HAZARD, BURN HAZARD!! Even quality electronics can fail CAUSING THE BLOWER TO RUN CONSTANTLY AND CAUSING EXCESSIVE TEMPERATURES! Power Draft Fans can get the temperature of your pit higher than through natural draft, so use extra caution in opening your pit and determining its placement. Always inspect your probe wires for damage. Damaged probe wires can cause the blower to run constantly causing your pit to become excessively hot.





WARNING: FIRE HAZARD, BURN HAZARD!! FLAMES, SPARKS AND LIT EMBERS CAN EXIT ANY OPENING ON YOUR PIT CAUSING FIRES - Keep your pit located a safe distance from anything flammable like buildings, walls, solvents, cars, fuel, wood piles, furniture, etc. and always use caution when opening the pit. Be aware that an ember that has fallen or is ejected from the charcoal cooker can be blown by a light wind into a garage or other structure, debris field, woods, or grass field and cause a fire to start. Always have a fire extinguisher and water supply close by. If the cooker is to be used on a wooden or combustible surface such as a wooden deck, always place the cooker on a non-flammable pad intended for this purpose.




WARNING: FIRE HAZARD, BURN HAZARD !! Even quality electronics can fail and cause the temperature to read incorrectly - BE SURE TO USE A REDUNDANT DIAL THERMOMETER AS A BACKUP TEMPERATURE SENSOR ON YOUR PIT – This will allow you to verify your control’s temperature reading for your safety.


 **WARNING:** SMOKE CAN COMBUST WHEN OXYGEN IS INTRODUCED AND PRODUCE SEVER BURNS – ALWAYS USE CAUTION WHEN OPENING THE LID OR DOOR OF YOUR PIT.


 **WARNING:** KEEP YOUR CONTROL DRY – Allowing your control to get wet can cause damage to its electronics and/or make it operate incorrectly CREATING A HAZARDOUS CONDITION.

 **WARNING:** Pit fires can occur when liquids are spilled or when cooking at temperatures that cause surfaces inside the cooker to reach the ignition temperature of fats. Never pour or toss water directly into a fat fire. Reduce the temperature by cooling the fire in the firebox with a water spray. Close the cooking chamber door and the firebox while it is steaming to smother the fire. This procedure may need to be repeated several times before the pit fire is under control.

NOTE: Pit fires can be largely avoided if the cooker is kept clean and free from fat buildup during or between cooks. Changing drip trays during a cook cycle will help keep flammable fats in the cooker to a minimum. Cooking temperatures should be kept low enough to avoid ignition. You are dealing with an open fire when you are cooking on charcoal and wood.

 **WARNING:** There are hot surfaces on all parts of the cooker before during and after cooking. Always wear protective clothing when tending the cooker or attempting to extinguish a fire or dumping a firebox in the proper ash receptacle at the end of a cook. Always be ready to call your local Fire Company in the case of an emergency before the situation gets out of control.

 **CAUTION:** fire danger is always present, even in the best of conditions. There is no substitute for continuous safety scrutiny on the part of the user.

 **WARNING:** SHOCK HAZARD, HIGH VOLTAGE!! The power supply for this product is plugged into a 120 or 240 VAC Mains. THIS VOLTAGE CAN KILL OR HURT YOU. KEEP THE POWER SUPPLY AWAY FROM WATER AND OFF OF THE GROUND - do not let it get exposed to rain or snow and NEVER TOUCH THE POWER SUPPLY IF IT GETS WET.

2.LIMITED WARRANTY

THE BBQ GURU warrants this product to be free from defect in workmanship and materials for a period of ninety days from the date of purchase.

1. Should unit malfunction, return it to the factory. If defective it will be repaired or replaced at no charge.
2. There are no user serviceable parts on this unit. This warranty is void if the unit shows evidence of being tampered with or subjected to excessive heat, moisture, corrosion or other misuse.
3. Components which wear or damage with misuse are excluded, e.g. relays, probes, etc.
4. THE BBQ GURU shall not be responsible for any damage or losses however caused, which may be experienced as a result of the installation or use of this product. THE BBQ GURU's liability for any breach of this agreement shall not exceed the purchase price paid E. & O.E.

3.BBQ GURU ProCom 4 Wireless Features

- Super compact wireless control pendant with up to 600 feet line of sight (outdoors) range from your pit
- Allows complete remote control and monitoring of your pit
- Digital alphanumeric 8 character x 2 line LCD display with backlight

- Audible alarm sounds on over/under temp, meat done, timeout and many other conditions
- Real time fan status and percent output indication helps you to measure fuel use
- Cook and Hold Feature
- Adaptive Control Algorithm and Open Lid Detect
- Super User menu for advanced users
- User settable low and slow ramp down feature
- User settable cook timer gives alarm or shuts down your pit
- Battery power indicator
- Adjustable Proportional band, cycle time, offset and deviation alarms
- Display in degrees F or C
- Alarms settable to on or off (good neighbor feature)
- Adjustable display contrast
- 32 to 400 deg F range with +/- 2 deg F accuracy (V1.9). 32 to 475 deg F range with +/- 2 deg F accuracy (V2.0, Rev. 3 hardware).

4. KEYS

ON/OFF – Powers the unit up and down. Must be held down for 2 seconds to power up.

BACKLIGHT – Turns the backlight on for 10 seconds past the last key press.

SCROLL – Indexes through the menu system.

UP – Indexes the shown value up.

DOWN – Indexes the shown value down.

ALARM SILENCE – Silences the current alarm condition.

5. CONTROLLER INDICATORS

(From top to bottom)

1. Power – energized when power is applied, is not energized in monitor mode (internal 9V battery power).
2. Power Draft – energized when the fan is on.
3. Ramp – Energized when the ramp is set to on.
4. In Range – Blinking when the control and handheld are within communicating range and no interference is present.
5. Out of Range – Blinking when the control and handheld are out of range or significant interference is present.
6. Error – Energized when an error is present such as the meat and pit temperature errors.

6. BATTERY POWER

Note: The 9volt battery is for monitor mode only and will NOT run the Power Draft Fan and all control parameters will become inactive.

7. CONTROLLER CONNECTIONS

From left to right:

Pit/Meat TC, Aux1,2 TC, 12V Pwr Input, Fan Output.

8.Adjusting LCD Contrast

Press and hold the backlight key and the up or down key to adjust the contrast.

9.Powering Up

Pressing the ON / OFF key will power the handheld up.

During power up the display shows:

B	B	Q	G	u	r	u
1	.	9		9	9	

1.9 is the Software version and 99 is the unit's serial number.

10.STANDARD USER MENU

The screens are shown in the order they appear as the scroll key is pressed. When the battery power screen is reached and the scroll key is pressed again the menu system will loop around to the selected main screen.

If the unit is left showing any screen for more than 10 seconds it will revert to the selected Main Screen.

10.1.Main Screen Selection

When the ProCom 4 is turned on the standard main screen appears. Pressing the up or down key scrolls through a selection of three main screens.

10.1.1.Standard Main Screen

The * shows when the fan is running. The numbers to the right are the actual Pit and Meat thermocouple temperatures.

P	I	T	*		2	7	3
M	E	A	T		1	8	0

From the standard main screen, if the up key is hit the setpoint screen is shown.

10.1.2.Setpoint Main Screen

The actual values are to the left and the setpoints are to the right.

P	2	7	3		2	7	5
M	1	8	0		1	8	5

If the up key is hit again **Shot Gun Fred's Screen** is shown.

10.1.3.Shot Gun Fred's Main Screen

This screen was designed for the advanced user and shows you the Pit Temp, Meat Temp, Cook Timer, Fan Status, and Fan %.

“R” is shown when the control is actively ramping.

“r” is shown when ramp is enabled but not active.

% Fan shows 0-9 and F for fan running full time.

P	2	7	3	M	1	8	0
0	0	:	0	0	R	*	5

If the up key is hit again the standard main screen appears again.

10.1.4. Temperature Display Messages

When the controller is out of range or interference is present the display will show screen below and then flash “MEAT TEMP UNKNOWN !”:

P	I	T	*	-	-	-
M	E	A	T	-	-	-

When the temperature is over 405 deg F the display will show:

OVL = Over Value Limit

P	I	T	*	O	V	L
M	E	A	T	O	V	L

When the temperature is below 32 deg F the display will show:

P	I	T	*	L	O	W
M	E	A	T	L	O	W

10.2. Aux Screen

Shows the Aux 1 and 2 thermocouple temperatures

A	U	X	1	1	0	5
A	U	X	2	1	2	5

10.3. Pit Setpoint Screen

Using the up and down keys the user can adjust the pit setpoint from 32 to 400 deg F.

The default setting is 275 deg F

P	I	T	S	E	T
2	7	5			

10.4. Pit Hold Setpoint Screen

Using the up and down keys the user can adjust the pit hold setpoint from 32 to 400 deg F. The default setting is 200 deg F. This is the temperature that the pit will be taken to at the expiration of the timer.

P	I	T	H	O	L	D
2	2	5				

10.5. Meat Setpoint Screen

Using the up and down keys the user can adjust the meat setpoint from 32 to 210 deg F. The default setting is 185 deg F

M	E	A	T	S	E	T
1	8	5				

10.6. Timer Screen

Using the up and down keys the user can adjust the cook timer duration, also displays the actual current time left in the cook. If the handheld unit is powered down, the setting will go to 00:00. NOTE. From 00:00 press down key to go to 99:59

T	I	M	E	R
0	0	:	0	0

10.7. Timeout Action Screen

Selects the timeout action no action, alarm, shut down or hold. The default setting is no action.

T	I	M	E	O	U	T
A	L	A	R	M		

10.8. Alarm Screen

Selects if alarms are on or off (AKA good neighbor feature). The default setting is on.

A	L	A	R	M	S
O	N				

10.9. Ramp On/Off Screen

Selects if ramp mode is set to on or off. The default setting is on.

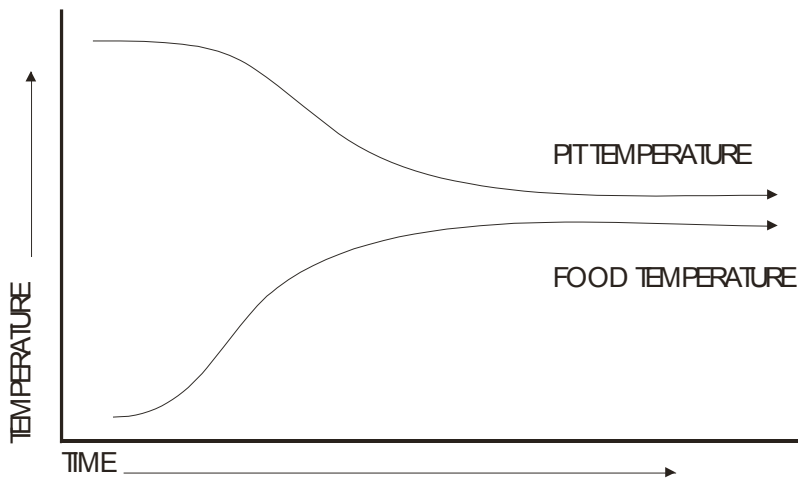
R	A	M	P
O	N		

10.9.1. Ramp Feature Description

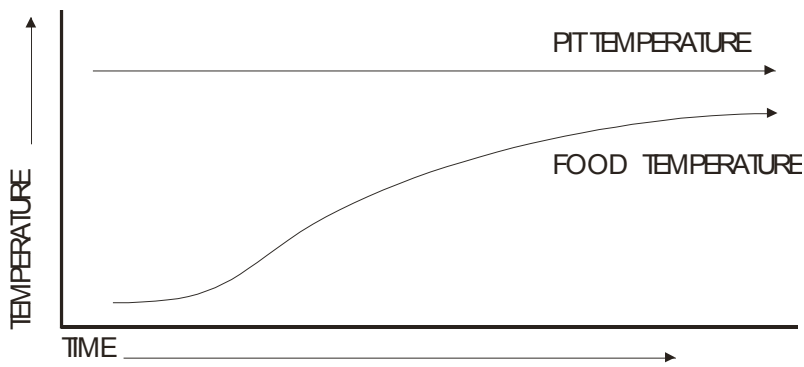
When the ramp is set to ON, the “low and slow” ramp mode is enabled. This mode is used for slow cooks so your food (meat) never over-cooks. Ramp mode is a very helpful feature in preventing overcooking. The fan will control the pit temperature as follows: the pit temperature will rise or remain steady as needed as the food temperature starts to rise. But as the food temperature nears its set point, the fan will control the pit so that the pit temperature will fall. Specifically this feature will gradually lower the pit temperature toward the food set point temperature when the food is within 30° of being done. The controller will hold the pit temperature slightly above your food set point as long as there is fuel. This feature is similar to cook and hold, but the control calculates everything for you.

The factory default setting is OFF so you must enable this feature to use it. Note when using this feature, you may want to start your pit temperature a little higher than normal

to reduce cook time and not overcook your food. If the food probe is not plugged in and the ramp mode is turned on, the ramp led will show steady (ramp mode is turned on) but no ramping will take place.



10.9.1.1.Ramp = ON Response Plot



10.9.1.2.Ramp = OFF Response Plot

10.10.Open Lid Detect On/Off Screen

Selects if open lid detect is set to on or off. The default setting is off.

L	I	D	O	P	E	N
O	N					

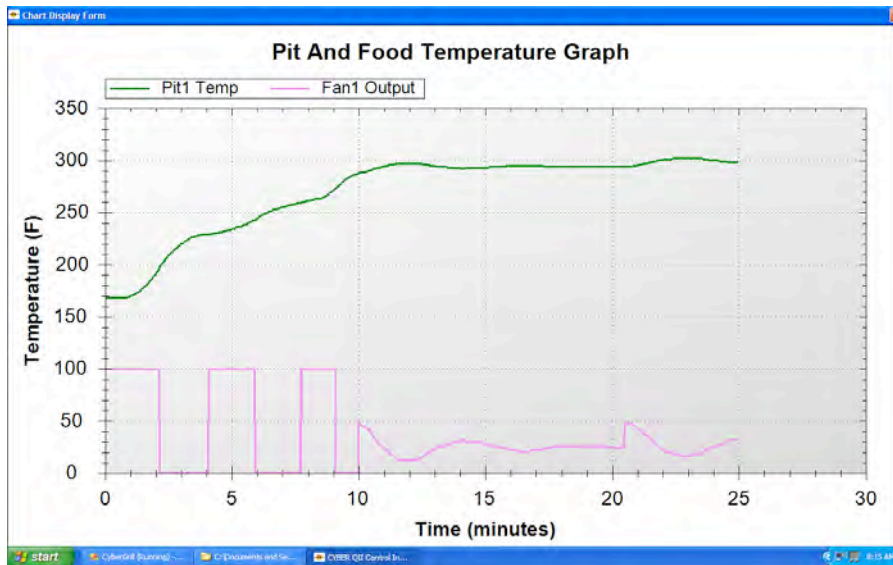
10.10.1. Open Lid Detect Description

This feature will allow quick recovery to the setpoint temperature after you open your lid. When the Open Lid Detect is set to ON, the feature is enabled. When you open your pit's lid, the temperature will drop. This can cause the blower to over-fire the coals and cause overshoot when the lid is shut. This mode detects when the pit's lid is open and minimizes the blower running during that time. Some overshoot will always be present when your pit's lid is opened and closed even if the blower is off, because it still introduces oxygen to the fire. This prevents the low alarm erroneously sounding when the temperature drops and the lid is open. The factory default is OFF, so you must enable this feature if you want to use it.

10.10.2. Open Lid Detect – Overshoot Eliminator

When the Open Lid Detect is enabled, the rate of temperature rise of your pit will be limited preventing over-firing. This will make a typical startup to a temperature of 250 deg F take a minimum of about 20 minutes and will help to eliminate startup overshoot.

Take note in the chart below how the output is cycled on the approach to the setpoint of 300 deg. This minimizes the setpoint overshoot on startup.



10.11. Battery power screen

Shows battery capacity in %.

B	A	T	T	P	W	R
9	5	%				

11. SUPER USER MENU

Press the scroll key and the up key to enter the Super User Menu.
Press the scroll key and the down key to exit the Super User Menu.

The screens are shown in the order they appear as the scroll key is pressed. When the Reset All screen is reached and the scroll key is pressed again the menu system will jump to the selected main screen.

If the unit is left showing any screen for more than 10 seconds it will revert to the Selected Main Screen.

11.1. Fan % Screen

Shows the current fan duty cycle in %.

F	A	N		P	C	T
5	1		%			

11.2.Signal Strength

This function is primarily for production testing. Shows the signal strength (A to D converter Counts) of the selected serial number

S	I	G		3	2	9
C	3	4	0	H	3	5
						1

In the example above, 329 is the selected serial number, 340 is the controller signal strength and 351 is the handheld signal strength.

11.3.Proportional Band Screen

Using the up and down keys the advanced user can adjust the Proportional band from 1-99 deg F. The default value is 25 deg F. For clarification of this feature see the definition of terms section at the end of this manual.

P	R	O	P	B	A	N	D
2	5		D	E	G		

11.4.Ramp Offset Screen

Using the up and down keys the advanced user can adjust the Ramp Offset from 10-60 deg F. The default value is 30 deg F. This offset is used as follows: When the controller is in ramp mode the internal pit setpoint will be ramped down from the pit setpoint to the meat setpoint + Ramp Offset. For clarification of this feature see the definition of terms section at the end of this manual.

R	M	P	F	F	S	E	T
3	0		D	E	G		

11.5.Deviation Alarm Screen

Using the up and down keys the advanced user can adjust the deviation alarm from 20 to 80 deg F. The default value is 50 deg F (50° above or below set temperature). The low deviation alarm is suppressed on startup, and will sound when the pit temperature is above or below the pit setpoint by this amount.

A	L	A	R	M	D	E	V
5	0		D	E	G		

11.5.1. Alarm Deviation Setpoint

If the temperature of the pit deviates above the setpoint by the alarm deviation setpoint, the alarm will sound and the display will blink “Pit Temp High!”.

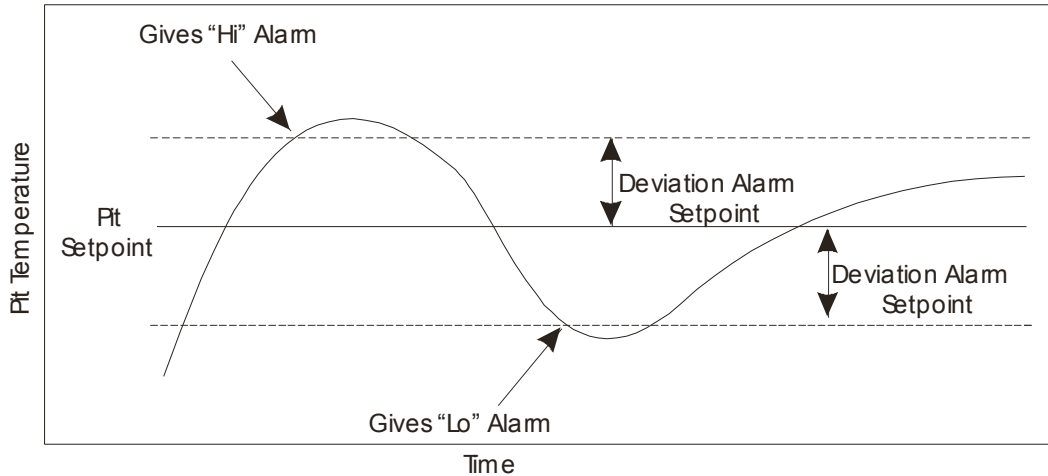
If the temperature of the pit deviates below the setpoint by the alarm deviation setpoint, the alarm will sound and the display will blink “Pit Temp Low!”.

The low alarm will not sound when your control is first powered up and your pit is cold.

The alarm is only allowed once the temperature gets close to the pit temperature setpoint.

The alarm deviation is settable from 20 to 80 degF and the factory default is 50 degF.

If the ramp feature is turned on and the pit is actively ramping, the only time that the low alarm will become active is if the pit temperature drops 20 degrees F below the food (meat) setpoint temperature to let you know that something is wrong, for instance you are out of charcoal.



11.5.1.1.Deviation Alarm Response Plot

11.6.Cycle Time Screen

Using the up and down keys the advanced user can adjust the cycle time from 4 to 10 seconds. The default value is 6 seconds. For clarification of this feature see the definition of terms section at the end of this manual.

C	Y	C	T	I	M	E
6		S	E	C		

11.7.Temperature Units Screen

Using the up and down keys the advanced user can set the temperature units to F or C. Default setting is F. This affects all temperature displays and settings.

T	E	M	P	U	N	I	T
F		D	E	G			

11.8.Reset All Screen

Using the up keys the advanced user or technician can restore the factory defaults to all values programmed in the unit, including calibration.

R	E	S	E	T	A	L	L
---	---	---	---	---	---	---	---

When the up key is pressed the display will show:

R	E	S	E	T	A	L	L
	D	O	N	E	!		

12.ALARMS

12.1.Meat Done Alarm

The meat done alarm screen flashes when meat temperature is greater than or equal to the meat setpoint. Also sounds beeper if alarms are set to on.

M	E	A	T		
	D	O	N	E	!

12.2.Pit Temp High

The pit temp high alarm screen flashes when pit temperature is greater than or equal to the pit setpoint + the deviation alarm value *50 deg F default* (50° above set temperature) Also sounds beeper if alarms are set to on.

P	I	T		T	E	M	P
	H	I	G	H	!		

12.3.Pit Temp Low

The pit temp low alarm screen flashes when pit temperature is less than or equal to the pit setpoint - the deviation alarm value *50 deg F default* (50° below set temperature). Also sounds beeper if alarms are set to on.

P	I	T		T	E	M	P
	L	O	W	!			

12.4.Timeout No Action

Time out flashes when timer is expired and timeout action is set to no action. Beeper is not sounded.

T	I	M	E	O	U	T	!
	N	O	A	C	T		N

12.5.Timeout Alarm

Time out alarm flashes when timer is expired and timeout action is set to alarm. Beeper is sounded if alarms are set to on.

T	I	M	E	O	U	T	!
	A	L	A	R	M		

12.6.Timeout Shutdown

Time out shutdown flashes when timer is expired and timeout action is set to shutdown. Beeper is sounded if alarms are set to on.

T	I	M	E	O	U	T	!
---	---	---	---	---	---	---	---

S H U T D O W N

12.7. Meat Temp Error

Meat temp error shows when the temperature exceeds 400 deg F on the meat channel. This typically indicates a damaged (open) meat thermocouple.

M	E	A	T	T	E	M	P
	E	R	R	O	R	!	

12.8. Pit Temp Error

Pit temp error shows when the temperature exceeds 400 deg F on the pit channel. This typically indicates a damaged (open) pit thermocouple.

P	I	T		T	E	M	P
	E	R	R	O	R	!	

12.9. Meat Temp Unknown

Meat temp unknown shows when the units are out of range or significant interference is present preventing the reading of the meat temperature for at least 5 seconds.

M	E	A	T	T	E	M	P
U	N	K	N	O	W	N	!

12.10. Handheld Pendant Battery Low

If the battery becomes weak in the handheld Pendant the handheld will show:

H	A	N	D	H	E	L	D
B	A	T	T		L	O	W

12.11. Controller Base Station Battery Low

If the battery becomes weak in the controller Base Station the handheld will show:

C	O	N	T	R	O	L	R
B	A	T	T		L	O	W

13. Relay Mode

The BBQ GURU Procomm 4's Relay Mode can be selected by pressing the Scroll and Alarm Silence keys during the power up sequence. Once the selection is made, it is stored by powering down and then powering back up (or by using the Scroll key when either OFF or OTH is selected).

When the Scroll and Alarm Silence keys are held down on power up, there are 4 choices of how the relay mode will operate which are selected with the up and down keys:

1. OFF – Default Setting; no relay mode is activated.
2. FAM – Only Relays messages for units that are in the family (have the same serial number). Operation is limited to the handheld being used as a repeater.

3. OTH – Only Relays messages that are for serial numbers other than the family. Operation is as a normal handheld that will repeat other family messages.
4. ALL – Relays all messages; for units that are in the family and for all other units. Operation is limited to the handheld being used as a repeater.

At a BBQ competition, if there is an extra Handheld available, the ALL mode would be a good choice since that unit will relay all messages.

If no extra Handheld is available, the OTH mode can be used by one Handheld located in the approximate center of the competition.

There are many possible circumstances of location and repeater selections that could cause excessive traffic and communication conflicts. Two repeaters in a given RF field complicates the situation and may cause messages to be ping-ponged indefinitely, clogging up the RF traffic.

14.Zero and Span CALIBRATION

Press and hold the up and down keys when the BBQ Guru Screen is shown on power up to enter the calibration menu. CAUTION: This is a factory calibration, not for the user to adjust. Zero and Span CALIBRATION is not affected by Reset All.

14.1.Zero Adjust Screen

Using the up and down keys a factory technician can adjust the zero calibration from -99 to +99. Zero calibration should be adjusted with an input of 32 degrees to the meat thermocouple input. The M: 32 is the value the control thinks it is seeing on the meat input. The +1 is the amount we are adding or subtracting from the reading to make it read correctly.

Z	E	R	O	:	A	D	J
+	1		M	:	3	2	

14.2.Span Adjust Screen

Using the up and down keys a factory technician can adjust the span calibration from -99 to +99. Span calibration should be adjusted with an input of approx 375 degrees to the meat thermocouple input. The M: 375 is the value the control thinks it is seeing on the meat input. The -4 is the amount we are adding or subtracting from the reading to make it read correctly.

S	P	A	N	:	A	D	J
-	4		M	:	3	7	5

15.CONTROLLER BASE STATION IN MONITOR MODE

The ProCom 4 is a stand-alone temperature monitor and will run on it's own internal 9 volt battery.

In order to use the ProCom 4 as a controller, 12 VDC power must be plugged in to the Base Station. This supplies power to the Power Draft Fan.

When 12 VDC power is plugged in, it overrides the 9 volt battery.

16. ADAPTIVE CONTROL STRATEGY

The Procomm4 Adaptive Control Strategy is designed to operate with a wide variety of bbq pits by continually learning what your pit is doing and adapting to many factors such as outside air temperature, amount of charcoal, damper settings, etc. For the Procomm4 to work properly and determine how to adapt, the temperature inside the pit cannot be oscillating up and down and the lid must stay closed. If you open the lid often, especially on startup, the control cannot be expected to maintain setpoint. If you leave the lid closed for approx 10-20 minutes, the temperature will become stable after the control adapts. If the lid has been shut for at least 20 -30 minutes and you notice the temperature going up and down significantly (+/- 10 degrees or more) the fan damper needs to be closed more; try ½ the current setting. Sometimes the Pit may run a few degrees high or low due to various conditions; don't sweat it, the control will bring it back to setpoint. Also remember that pit temperatures of 20 degrees high or low rarely have an affect on the quality of food.

17. BUILDING A PROPER FIRE FOR GOOD CONTROL

How you build the fire in your pit is critical for good control, especially at low temperatures. Stack the charcoal inside your pit so it's shaped like a pyramid, small at the top and large at the bottom. Light the fire by lighting a few coals at the top. Do not over-fire the charcoal or light it at the bottom, because this will only translate into startup overshoot and over-firing. Some overshoot is normal and it may take a while for the fire to stabilize.

17.1. Eliminating Large Fluctuations in the Pit Temperature

Normally the Procomm4 will be able to adjust the airflow via the blower to deliver precise control and no damper adjustment will be required. If the pit has become over fired or if you built the fire too big, you may see large temperature swings (+/- 10 deg or more). To eliminate this you may need to restrict the airflow by adjusting the blower damper. A good rule of thumb is that if you see large temperature swings, try closing the damper to half the current setting; the pit should stabilize within 10-15 minutes after adjustment.

17.2. To Extinguish The Pit

If there is fuel left over from the cook, you can save this fuel by closing off any open dampers or removing the blower and plugging the inducer sleeve opening with a kill plug. This should put the fire out in about 30-45 min.

18. DEFINITION OF TERMS

Proportional Band – This value is the band of temperature over which the power draft fan will pulse. Say your internal pit setpoint is 225 (215 + 10 deg offset). Below 200 the power draft blower will be full on, above 225 the power draft blower will be full off and at 212.5 the power draft blower will cycle 50% of the time. The default value of 25 degrees will work well with most pits. If you notice that the pit temperature is oscillating up and down more than 5 to 10 degrees and never settles out, the proportional band can

be made larger. Making the proportional band smaller will make the pit reach the setpoint faster, but will also increase the overshoot on startup. Each time you adjust the proportional band, expect that you will also need to adjust the offset to make the pit setpoint and actual temperature agree.

Cycle Time – This value is the time (in seconds) between power draft fan pulses. The default value of 6 seconds will work well with most pits.

Ramp Offset – When the ramp mode is turned on, the pit will be ramped down to the Food setpoint + the ramp offset when the Food temperature = the Food setpoint. The default value of 30 degrees will work well for most cuts of meat. For instance if your pit setpoint is 275 and your Food setpoint is 180, the pit will be ramped down to 210 (180+30) as your Food temperature climbs to 180. We determined the 30 degrees based on the amount of evaporative heat loss in an average piece of meat. If you make this lower the Food setpoint may never be achieved at the end of the ramp cycle due to the amount of evaporative heat loss. If you make this higher the Food setpoint may be slightly exceeded at the end of the ramp cycle.