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A Breakthrough in BBQ

Pitminder NanoQ II USER GUIDE Rev. 1.0 for Ver. 0.4 Firmware

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.NanoQ Features

Your new NanoQ is the simplest yet state-of-the-art pit temperature controller. This extremely accurate device combines simplicity and ease of use, giving you control over your pit's temperature to ensure great BBQ. The simple sophistication and reliable design of the NanoQ makes use of the temperature indicator already built into your pit.

- User-friendly simple pit temperature control
- Setpoint Capture Feature sets your setpoint to the read temperature
- Adaptive Control Algorithm learns your pit for optimal control
- Open Lid detect reduces temperature fluctuation and overshoot
- Exclusive magnetic mount
- Real-time blower status indication
- 50 to 475 deg F range with +/- 5 deg F repeatability
- Runs on 100-240VAC (for worldwide use) or 12VDC for automotive supply use
- Rugged, armored high-temperature pit probes

4.Probes

The probes provided with your NanoQ are rugged stainless steel precision thermocouples. These are not low cost thermistors like inexpensive monitors. The thermocouple wires have an armor braid with fiberglass insulation for high temperatures (up to 1,000 degrees F). The user can pass these thin wires under the lid of the grill or through a small hole opening without creating a large gap which would allow air to get through (air intrusion). Be careful not to kink these rugged yet small wires or let them come in contact with flames. Always store them by rolling them neatly and tying with

the supplied Curleez. These probes are user-replaceable and are available at www.thebbqguru.com; we recommend having a spare set for unforeseen emergencies.

Important Note:
Be sure to fully insert your probes into the control. Push the plug into the connection securely until you feel and hear it snap in place. If you do not plug the probes in securely, you may experience sporadic operation or a blinking yellow LED and the NanoQ will not control your cooker accurately. The temperature may also read low causing you cooker to get excessively hot.

5. Power Draft Blowers
All blowers are equipped with an adjustable damper and an aluminum nozzle. The blower housing is constructed of stainless steel for a clean, durable and long lasting finish.

5.1. Blower Size

The Standard 4 CFM blower is good for small or medium size grills and smokers.
The 10 CFM and 25 CFM blowers are good for medium and large grills and smokers.

5.2. Blower Damper Adjustment

The adjustable damper can be completely closed to kill the fire, or can be adjusted to a small opening for cold smoking (very low temps).   This feature allows the user to make fine adjustments on their own grill or smoker due to natural drafts that effect cooking temperature during the blower's off cycle. Testing on different settings is recommended. Open damper fully for quick start up or grilling at high temperatures. Close 1/2 way for smaller cookers or low and slow cooking. Close ¾ of the way for cold smoking.

6. Key Operation
UP ▲ – Indexes the setpoint up in 5 deg F increments.
DOWN ▼ – Indexes the setpoint down in 5 deg F increments.
UP & DOWN ▲ + ▼ for 1 second – Captures a new setpoint.

UP & DOWN ▲ + ▼ for 3 seconds – Resets the setpoint to the factory default of 225 deg F.
UP & DOWN ▲ + ▼ for 5 seconds – Sets the setpoint to 475 deg F.

7. Powering up
Upon applying power, the NanoQ will energize the LEDs in the following sequence:

RED FAN LED > WHITE UTILITY LED > YELLOW ERROR LED

7.1.Power Interruption Recovery Feature with Internal Memory

Because of the internal memory, if there is a brief or sustained power interruption at any time while cooking with your NanoQ, the unit will automatically restart and continue to control your grill/smoker at the same settings you originally set, once power is restored.

8.Connection and Indicator Diagram
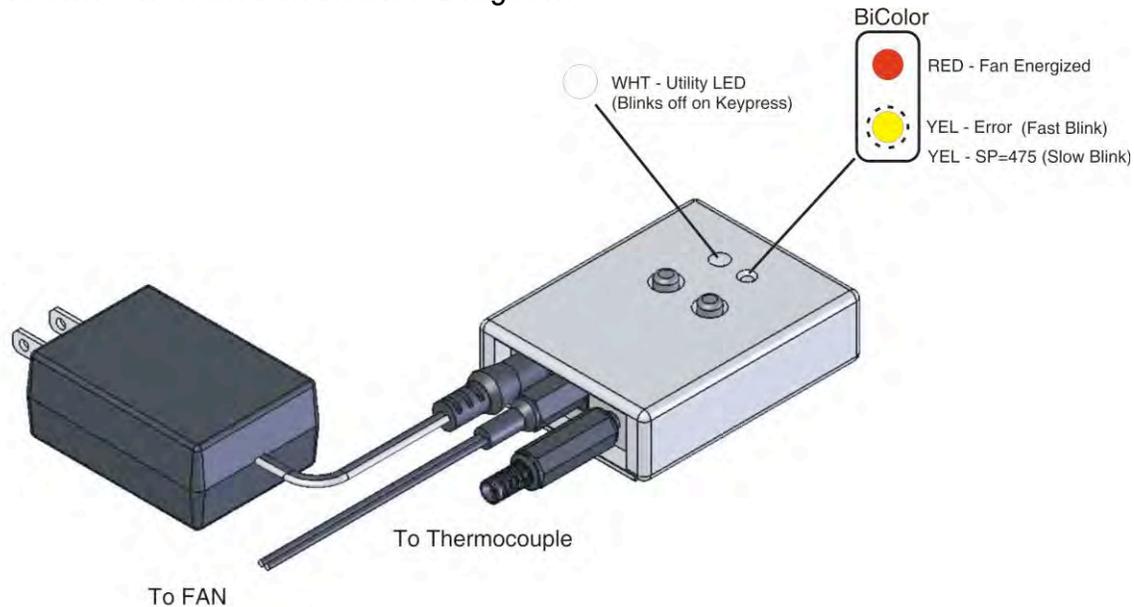
9.The Display

9.1.Blower Status Indicator LED

As you gain experience cooking with your NanoQ, you will learn to rely on the Blower Status Indicator to tell you how it is controlling. When all is going well and there is plenty of charcoal in your pit, the blower will just gently puff the fire (feeding it little bursts of oxygen). When you start to run out of charcoal you may notice the blower running almost all of the time.

9.2.Error Indicator LED

The Error Indicator blinks yellow when the sensor is bad or the temperature has gone over ~485deg F.

9.3.Utility Indicator LED

The Utility Indicator is provided for general use as a power indicator, as well as doubling as a flashlight. It is also used to indicate when a key is pressed. To show a keypress it will blink off momentarily.

10.Setting the Setpoint
Set the NanoQ setpoint to specify the desired temperature of your pit.

When the NanoQ arrives from the factory, the setpoint will be 225 deg F +/- 10 deg (all temperatures reffered to in this user guide are +/- 10 deg F tolerance).

To adjust the setpoint up by 5 deg F, simply press the UP ▲ key. If you hold the UP ▲ key down, the value will continue to increment by 5 degrees with each blink of the Utility LED.

To adjust the setpoint down by 5 deg F, simply press the DOWN ▼ key. If you hold the DOWN ▼ key down, the value will continue to decrement by 5 degrees with each blink of the Utility LED.

To show you that the setpoint is set to the maximum, anytime the setpoint is set to 475 deg F (max temp) the yellow led will blink about once every 2 seconds.

10.1. To Capture a Temperature Setpoint

The setpoint capture feature can be likened to a cruise control set button in that it makes your setpoint equal to the current temperature read on your pit's dial thermometer. If your pit is already at the temperature that you want to cook at, you can easily capture the setpoint to maintain that temperature. To capture the new setpoint, simply press the UP ▲ & DOWN ▼ keys for one second. The White Utility Led will blink off to indicate this new setting. Ten seconds after your last key press, the white Utility LED will quickly flicker to show that your setting has been stored. This ensures that the setpoint has been entered in the internal memory and will be "remembered" for the next time it is powered up (or in the event of a power recovery after an interruption).

10.1.1. To Capture a Temperature Setpoint on the way up to 475 degF.

Let's say you want to set the setpoint to 350 degF, but don't want to deal with hitting the up key multiple times. Heres what to do:
1. Set the setpoint to 475 quickly by following the "Setting a Temperature Setpoint of 475 degF" section below. You just hold the UP ▲ & DOWN ▼ keys for 5 seconds (three blinks off of the Utility LED). The setpoint is now 475 deg F.
2. On the way up to 475 deg F, just watch your pit's dial indicator. When it is at the temperature you want to maintain (350 in this example), just capture the new setpoint by pressing the UP ▲ & DOWN ▼ keys for one second (one blink off of the Utility LED).

Your setpoint is now set to where you saw the dial indicator at the time of the capture (350 deg F for this example).

10.2. Restoring a Temperature Setpoint of 225 degF.

To return the NanoQ back to its factory setpoint of 225 deg F, simply hold down the UP ▲ & DOWN ▼ keys for 3 seconds until the Utility LED blinks off two times. It will blink off after one second to show the setpoint capture and will blink off again after 3 seconds to show the restoration of a 225 deg F setpoint. Ten seconds after your last key press, the white Utility LED will quickly flicker to show that your setting has been stored. This ensures that the setpoint has been entered in the internal memory and will be

"remembered" for the next time it is powered up (or in the event of a power recovery after an interruption).

10.3. Setting a Temperature Setpoint of 475 degF.

To set the setpoint to 475 deg F, simply hold down the UP ▲ & DOWN ▼ keys for 10 seconds until the Utility LED blinks off three times. It will blink off after one second to show the setpoint capture, it will blink off again after 3 seconds to show the restoration of a 225 deg F setpoint, and it will blink off again after 5 seconds to show the setting of the setpoint to 475 deg F. Anytime the setpoint is set to 475 deg F (max temp) the yellow led will blink about once every 2 seconds. Ten seconds after your last key press, the white Utility LED will quickly flicker to show that your setting has been stored. This ensures that the setpoint has been entered in the internal memory and will be "remembered" for the next time it is powered up (or in the event of a power recovery after an interruption).

11. Open Lid Detect
This feature will allow quick recovery to the setpoint temperature after you open your lid. 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. The factory default setting for the open lid detect is enabled so you must disable this feature if you have problems with excess air currents in your pit.

11.1. 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.

11.2. Open Lid Detect Configuration

When your NanoQ is shipped from the factory, the default setting is open lid detect on. You must disable this feature if you have problems with excess air currents in your pit. To disable open lid detect hold the DOWN ▼ key for one second while applying power. To re-enable open lid detect, hold the UP ▲ key for one second while applying power. This setting will be stored for the next time you power up.

12. Adaptive Control Strategy
The NanoQ's 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 NanoQ 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.

13. 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.

13.1. Eliminating Large Fluctuations in the Pit Temperature

Normally the NanoQ 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 (+/- 20 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.

13.2. 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.

14. Connections

From left to right: Power Input, Blower Output, Pit probe.

15. Contact THE BBQ GURU

THE BBQ GURU
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