



IQ120

SETUP AND OPERATING INSTRUCTIONS



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Read this material before using this product. Failure to do so can result in property damage, injury, or even death. SAVE THIS MANUAL!

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SAVE THIS MANUAL

Keep this manual for the safety warnings and precautions, assembly, operating, inspection, and maintenance. Write the product's serial number if provided in the back of the manual (or month and year of purchase if product has no number). Keep this manual and the proof of purchase in a safe and dry place for future reference.

IMPORTANT SAFETY INFORMATION

In this manual, on the labeling, and all other information provided with this product:



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.



DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.



WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.



NOTICE is used to address practices not related to personal injury.

IQ120 SAFETY WARNINGS



WARNING: Cooking with fire is inherently dangerous. Read all safety warning and instructions. It is not possible to warn you of every possible misuse and failure. Apply

common sense and use extreme caution!

*Failure to follow the warnings and instructions may result in electric shock, fire, serious injury and/or death. **Save all warnings and instructions for future reference!***

1. READ ALL INSTRUCTIONS AND MATERIALS

- a. Read all and obey all safety information that came with your cooker. This manual cannot replace the safety information that came with your cooker.
- b. Read and understand this manual thoroughly.

2. FIRE HAZARD

- a. Keep pit and fire at least 10' away from all flammable materials, liquids, and gas.
- b. Do not cook on a flammable surface such as a wood deck.
- c. Keep your cooker clean. Accumulated grease can catch fire. Never extinguish a grease fire with water. Close all vents to starve it of oxygen.
- d. Build fire so burning embers can't fall into the IQ120's flexible tube. Burning embers can burn through and catch fire to surrounding area.
- e. Do not cook in high winds. Winds can blow cooker over or blow sparks causing surrounding area to catch fire.

3. CARBON MONOXIDE HAZARD

- a. Do not cook indoors. Toxic fumes and carbon monoxide will accumulate.
- 4. DO NOT USE ON PROPANE GRILL**
- a. This product is intended for charcoal cookers only. You must not try to regulate the temperature of a propane grill by controlling airflow.
- 5. KEEP CHILDREN AWAY**
- a. Keep small fingers out of air intake.
- 6. BURN HAZARD**
- a. Do not touch hot cookers or accessories.
- 7. ELECTRIC SHOCK HAZARD**
- a. Use only provided AC power adapter or low voltage DC source.
 - b. Do not use in wet location.
 - c. Never touch wet adapter or wet power cord.
 - d. Use only UL approved extension cords.
 - e. Observe all local electrical codes.

IQ120 SAFETY FEATURES

The IQ120 has numerous safety features built in. The blower has a redundant power control circuit to ensure that it can only blow air when the internal controller is operational and all parameters are within valid range. It has a power-on self test to verify proper operation of the blower before attempting to control the pit. It has an internal temperature sensor that will cease blower operation if the enclosure is over temperature. Finally, temperature probes must be in their valid range for the blower to operate.

INSTALLATION

Read the Installation Page and watch the installation videos appropriate for your cooker at pitmasterIQ.com. It is impractical to cover all pit types and adapters in this manual. The adapter you ordered came with an Installation Note specific to your pit style; please refer to this. This instruction manual is intended to supplement the videos, not replace them.

IQ120 Placement

Attach the IQ120's blower tube to the cooker adapter. A finger operated clamp is included with some adapters to secure the tube to the adapter.



The IQ120 must be kept at least 2" from your cooker. Failure to follow this warning can lead to fire causing property damage, personal injury or even death!

The IQ120 can be hung by the included rope handle from a hook or handle on the cooker only if the IQ120 does not come closer than 2" from the body of the cooker. Failure to maintain this air gap can cause the IQ120's enclosure to be damaged and / or can result in fire, possibly resulting in property damage, personal injury, or even death.

It is recommended to hang the IQ120 from a table, chair, or another object away from the cooker. Alternately, it can be laid on its back on any **cool** horizontal surface.

Probe Routing



The IQ120 probes are very accurate platinum RTD sensors and are delicate. Handle them with care! Do not yank on them,

keep them at least 24" from flames, do not pinch the cable, roll up neatly for storage, and do not run through dishwasher. Failure to follow this notice may result in probe damage.

Probes should be routed into the cooker attaching the alligator clip to the cooking grate at least 2" away from where food will be placed. They can be routed in through a damper or stack in the lid, underneath a soft gasket, or through a silicone grommet. They should never be pinched between metal surfaces.

A convenient method of placing the probe near the food without touching it is to place a wooden skewer into the food and clip the temperature probe about 3" away.

Probe Care

Probes wear with use and may fail. Here are a few frequent causes of premature probe failure:

- ***Pulling on the cable to release the alligator clip*** - Never pull on the cable. Pinch the alligator clip to release. If the cable is bound, do not pull on it. Instead, unbind it by straightening it out.
- ***Allowing cable to exceed 500°F*** - The cable is Teflon insulated and rated to 500°F. This temperature is easily exceeded when the lid is left off. It is easy to be focused on removing your cooked meat and getting it inside, and forgetting to close the lid. Doing so will likely ruin your probe. Do not route your probe within 12" of a smoldering fire, or 24" of flames.
- ***Pinching it under a cooker's lid*** - Sharp edges are very hard on the delicate wires inside the metal

sheath. Route your probe into the cooker in a manner that does not pinch the wire with a metal edge. If you must route in under a lid without a gasket, cut a 1/8" wide by 1/4" long slit into the body's lip to pass the cable through, preventing the pinching action of the lid.

- ***Running it through the dishwasher*** - The probe is water resistant but must not be submerged. Clean your probe with a damp paper towel taking care not to pull on the cable.
- ***Knotting it up and throwing in a box with heavy items*** - When done using your IQ120, allow the probe to cool and then gently remove it, coil it up, and store in a quart-size Ziploc bag. Store in a safe place.

Temperature cycling and especially handling may eventually cause your probe to fail. Competition cooks are encouraged to keep a spare. Their cost is about the same as a 20-lb bag of quality lump charcoal.

Power Connection

The IQ120's power input jack requires 12 VDC @ 1 A. The mating plug is 5.5mm OD, 2.1mm ID, center positive. A suitable Radio Shack *plug* is p/n 274-1569. The IQ120 can be powered from a cigarette lighter socket power cord and pitmasterIQ.com has these available. If making your own cable, it is essential to use a 1A fuse in series with the positive battery terminal as close to the terminal as possible. The IQ120 will run from the 12 VDC provided by common rechargeable car "jumper boxes" for many hours, depending on the condition and capacity of the storage battery.

The IQ120 comes with a 100-240 VAC 50/60 Hz switching power adapter to provide the required 12 VDC. Replacement power supplies are available at pitmasterIQ.com, however they are also available at Radio Shack: Enercell Adapter p/n: 273-358. Requires Adaptaplug "M", p/n: 273-344.

WARNING

Household AC wall voltage is lethal! Touching the adapters metal prongs while plugged in or anything metal connected to the power receptacle will result in electrical shock which may cause property damage, injury or even death! Do not use in a wet location. Do not touch a wet power adapter or electrical cord. Do not allow the power adapter to lie on the ground. Failure to observe these warnings will result in electrical shock which may cause property damage, injury or even death!

OPERATING INSTRUCTIONS: FIRE MANAGEMENT

Building The Fire

It may seem odd that this is addressed here, but properly building your fire is crucial to your success. Most importantly is learning to build your fire smaller than you normally would. We don't mean including less fuel, we just mean starting your pit with fewer hot coals. This is important to remember because the IQ120 can *actively* increase temperature, but only *passively* decrease it. Starting your pit too hot will lead to a large temperature overshoot, possibly followed by a near fire-extinguishing off period. On some pits this hot/cold cycle condition can last indefinitely.

For best results, watch our videos for your cooker type and others too. The few minutes spent will be informative. We can't teach you how to build a fire for every pit, for every possible cooking temperature, in every ambient condition, with every possible meat load, that's just not practical. But, think about how much lit charcoal you would normally start up with *without* use of the IQ, and use 1/2 that much instead. Keep a log of your cooks, damper setting, cooking temperatures, amount of charcoal, etc. Then next time, try starting up with a few more coals and observe the behavior. Within a few cooks, you'll have the hang of it.

Adjustable Intake Damper

The adjustable intake damper allows the user to "tune" the airflow to their pit. The hot air inside the cooker has a tendency to rise and exit through the exhaust stack/damper in the lid. As it does, replacement air will be sucked into the pit through its leaks, and through the IQ120, feeding the fire even when the IQ120's blower is not spinning. This is called convection drafting. The hotter and taller the cooker, the more this effect is noticed. This effect can be combated by restricting the convection drafting airflow at either the intake, exhaust or both. Only with experience will you know where to set your cooker's and IQ's dampers.

Position	Function
4	100% Airflow
3	75% Airflow
2	50% Airflow
1	25% Airflow
0	Closed

The determination of the proper damper position is left to the user as each pit behaves differently. The thing to remember is HEAT + FUEL + AIR = MORE HEAT. If you're running hot, try cutting back on airflow. The IQ can blow air, but it can't keep air from feeding the fire through cooker leaks and the natural "blower off" path through the IQ.

In general, it's best to error on the side of too much restriction. The IQ120 can always blow more to overcome the restriction, but if there's not enough restriction, then it is helpless to the convection draft feeding the fire causing temperatures to increase beyond the setpoint.

OPERATING INSTRUCTIONS: NORMAL MODE

IQ120 Power-on Self Test

When power is first applied to the IQ120, it displays the software version for 2 seconds and then performs a Power-on Self Test to make sure that the blower operates properly. The IQ120 has numerous safety mechanisms in place to make sure the blower can be controlled properly. These include measurement of PCB temperature, measurement of blower RPM, and redundant electronic power switching of the blower. If any of these things are not functioning properly at power-on, the IQ120 displays *POST Fail* and will not operate the blower.



Defeating the POST Fail warning can lead to fire causing property damage, personal injury or even death! Monitor the pit and the fire at all times!

The POST Fail warning can be defeated by double-clicking. This will take the controller to normal mode.

IQ120 Normal Mode

After a successful POST, the IQ120 enters *Normal Mode*. In normal mode, the pit and/or food temperature is displayed in the 3 rightmost digits. The leftmost digit is reserved for the *Virtual Blower* display. By default, PIT TEMP is displayed. This is indicated by the PIT LED in the upper left of the display. Clicking once will cause the FOOD LED to light and the FOOD TEMP to be displayed. Clicking again will enter SCAN mode where both the PIT and FOOD are displayed in an alternating fashion. Clicking again will return to displaying only the PIT TEMP.

In normal mode, the desired cooking temperature can be changed simply by rotating the knob to the new setting and clicking once to lock it in.

Virtual Blower - The virtual blower display is a representation of the blower's activity. If the blower is spinning, the leftmost digit will "rotate" once per second. You can determine how hard the blower is working by counting the rotations. The blower's on/off cycle period is 20 seconds. If you count 5 virtual blower rotations, then the blower is spinning 5 seconds out of a possible 20, and so is blowing 25% of the time ($5 \div 20 \times 100\%$). This is called the blower's *Duty Cycle*.

Knowing the blower's duty cycle can be useful determining how the cook is progressing. Most of this knowledge will come from repeated use and the experience gained, but for example, if the blower's duty cycle is high (close to 100%), this may be an indication that the cooker's fuel source is low.

IQ120 Alarms & Notifications

While in normal mode, alarms and notifications can be presented. Alarms are higher priority than notifications. Alarms are presented once every 10 seconds, and notifications every 20 seconds. If an alarm is active, the ALARM LED will flash rapidly. A notification will cause the ALARM LED to flash slowly. Any alarm except a Probe Error alarm can be silenced by a single-click *while the alarm message is scrolling by in the display*. A silenced alarm is still presented, but the beeper no longer sounds.

The following is a list of alarms and notifications, presented in priority order:

Unit Hot - The internal temperature of the enclosure has exceeded a threshold. Move it away from the cooker and into the shade. If it is a clear rain box in the sun, the Greenhouse Effect may be heating the interior of the rain box. Set the display brightness to its minimum value.

Probe Error - The Pit Probe or Food Probe has failed, or is not plugged in all the way. The Food Probe will only cause an alarm if the Food Alarm or the Food Temp parameters are non-zero.

Food done - The Food Temp has reached the value in the parameter Food Alarm.

Pit Hot - The Pit Temp has exceeded the setpoint by the value in the parameter Pit Alarm. For example, if Pit Set

is 225°F and Pit Alarm 20°F, this alarm will sound when the Pit Temp exceeds 245°F. Does not sound on startup.

Pit Cold - The Pit Temp has fallen below the setpoint by the value in the parameter Pit Alarm. For example, if Pit Set is 225°F and Pit Alarm 20°F, this alarm will sound when the Pit Temp falls below 205°F. Does not sound on startup.

Lid off - Indicates that the Lid Off Blower Delay is in effect. Does not sound the beeper, just a notification.

DELAY TIME - Indicates that the Pit Set setpoint parameter will be automatically changed when the time delay expires. Does not sound the beeper, just a notification.

Food Pit Set - Indicates that the Pit Set setpoint parameter will be automatically changed when the food reaches the temperature in the Food Temp parameter. Does not sound the beeper, just a notification.

OPERATING INSTRUCTIONS: PROGRAM MODE

IQ120 Program Mode

Program mode is used to change operating parameters within the IQ120. A partial list of parameters that can be changed includes Lid-Off Detection, Blower Speed, and the temperature at which the Food Alarm sounds.

Program mode is entered from normal mode by a 3 second click (press knob and hold down for 3 seconds). The first

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parameter, *Pit Set*, begins scrolling by. The desired parameter is searched for by turning the knob. Turning the knob clockwise scrolls the following parameter list from top to bottom. Turning counterclockwise scrolls up the list. This is the parameter *selection* mode.

When the desired parameter is found, click once to select. The parameter's value now begins flashing. This is the parameter *editing* mode. Turning the knob allows the parameter to be changed to the new value. When the desired value is displayed, click once to save the new value and return to the parameter selection mode.

Program mode is exited with a 3 second click while in parameter *selection* mode. (Does not work when in parameter *editing* mode.)

IQ120 Program Menu

PIT SET **Name:** *Pit Set (Pit Setpoint)*; **Range:** 150-400°F (66-204°C); **Default:** 225°F (107°C); **Description:** Present cooking temperature setpoint.

Food ALArTi **Name:** *Food Alarm*; **Range:** 0, 100-250°F (0, 10-121°C); **Default:** 0; **Description:** Food temperature at which the *Food Done* alarm sounds. Set to 0 to disable. Will cause *Probe Error* alarm if non-zero and food probe is not connected.

PIT ALArTi **Name:** *Pit Alarm*; **Range:** 0, 20-100°F (0, 11-56°C); **Default:** 0; **Description:** The *Pit Alarm* will sound when the actual pit temperature differs from the *Pit Setpoint* by this amount for more than 5 minutes. Will not
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alarm until pit has stabilized at *Pit Setpoint*. Will not alarm on manual or automatic *Pit Setpoint* changes.

Lid dEtECT **Name:** *Lid Detect*; **Range:** on-off; **Default:** on; **Description:** Optionally disables the automatic *Lid Off Detect* algorithm. This algorithm attempts to prevent a temperature overshoot when it detects that the cooker's lid is off or door is open. In this case, it is assumed that the fire has just received a large dose of oxygen-rich air and so the blower is disabled briefly. Should be disabled for cookers whose firebox is not exposed when the door is open like gravity feed style cookers.

FAn SPeeD **Name:** *Fan Speed*; **Range:** 0-5; **Default:** 0; **Description:** Optionally disable automatic blower speed control algorithm by setting to a value between 1-5. Minimum speed = 1, maximum = 5. Set to 0 to enable automatic blower speed control. Hint: set to 5 for big, air hungry cookers and 1 for small, efficient cookers like Chargriller Akorns.

TEmp UnITS **Name:** *Temp Units*; **Range:** F-C; **Default:** F; **Description:** Converts between Fahrenheit and Celsius for all displayed temperatures. Note: User must remember which units have been chosen as they are not displayed.

Sound **Name:** *Sound*; **Range:** 0, 1-5; **Default:** 5; **Description:** Optionally reduce beeper volume or disable the beeper for quite operation (neighbor friendly).

dI SPLAY **Name:** *Display*; **Range:** 1-3; **Default:** 2; **Description:** Optionally increase (3) or decrease (1) display brightness.

dELAY tIME **Name:** *Delay Time*; **Range:** 00:00-24:00; **Default:** 00:00; **Description:** Countdown timer in Hours:Minutes format. Minimum is 15 minutes (00:15), maximum is 24 hours (24:00). Set to 00:00 to disable. Value is not lost when power is removed (important at competitions where power is unreliable), so beware that a *Pit Set* change will occur the next time the controller is used unless first set to 00:00 !!! See *Delay Pit Set* next for additional explanation.

dELAY PI t SEt **Name:** *Delay Pit Set*; **Range:** 0, 150-400°F (0, 66-204°C); **Default:** 0; **Description:** Future cooking temperature (*Pit Set*) to be used when the *Delay Time* countdown timer has expired. Set to 0 to disable this feature. Upon *Delay Time* countdown to zero (00:00), the actual *Pit Set* parameter stored in non-volatile memory is changed to this value (important at competitions where power is unreliable), so beware that the new cooking temperature will be in effect the next time the controller is used !!! Alarm LED flashes slowly and a notification is presented in the display periodically when in effect.

Food tEMP **Name:** *Food Temp*; **Range:** 0, 100-250°F (0, 10-121°C); **Default:** 0; **Description:** See *Food Pit Set* below. Will cause *Probe Error* alarm if non-zero and food probe is not connected.

Food Pit Set **Name:** *Food Pit Set*; **Range:** 0, 150-400°F (0, 66-204°C); **Default:** 0; **Description:** Future cooking temperature (*Pit Set*) to be used when the food has reached the temperature defined by *Food Temp*. Set to 0 to disable this feature. Upon food reaching the temperature defined by *Food Temp*, the actual *Pit Set* parameter stored in non-volatile memory is changed to this value (important at competitions where power is unreliable), so beware that the new cooking temperature will be in effect the next time the controller is used !!! Returns to 0 when *Pit Set* is automatically changed. Alarm LED flashes slowly and a notification is presented in the display periodically when in effect.

RESET PARAMS **Name:** *Reset Params*; **Range:** yes, no; **Default:** no; **Description:** When set to yes, all parameters are restored to factory defaults as defined in this section. Value is instantly returned to *no* to indicate restoration is complete. If you're having trouble understanding the behavior of your IQ120, execute this function and try cooking again before contacting customer service.

IQ120 Programming Examples

⚠ WARNING ***Programming your IQ120 to automatically increase cooking temperature can lead to fire causing property damage, personal injury or even death! Grease fires can result! Monitor the pit and the fire at all times!***

Food Pit Set & Food Temp - Suppose you want to cook your brisket at 200° for a long time to maximize smoke

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absorption and then finish cooking at 250° to get it done quicker. It is known that meat stops *absorbing* smoke around 130-140°F. So, you set *Pit Set* to 200°, *Food Pit Set* to 250°, and *Food Temp* to 140°F. When the food gets to 140°F, *Pit Set* is automatically changed to 250°F and *Food Pit Set* is automatically changed back to 0. Works independently of *Delay Pit Set*. Note that in this example, you could set *Food Alarm* to 204° and the beeper would sound when the brisket is done.

Delay Pit Set & Delay Time - In this example you want to cook your chicken thighs at 250° for one hour and 15 minutes, and then to crisp the skin, increase your cooking temperature to 350° until an internal temperature of 180° is reached. So, you set *Pit Set* to 250°, *Delay Pit Set* to 350°, and *Delay Time* to 01:15. After *Delay Time* counts down to 00:00, *Pit Set* is automatically changed to 350°F. Works independently of *Food Pit Set*. Note that in this example, you could set *Food Alarm* to 180° and the beeper would sound when the chicken is done.

LIMITED WARRANTY

pitmasterIQ.com makes every effort to assure that its products meet high quality and durability standards, and warrants to the original purchaser that this product is free from defects in materials and workmanship for the period of 180 days from the date of purchase[†]. This warranty does not apply to damage due directly or indirectly, to misuse, abuse, negligence or accidents, repairs or alterations outside our facilities, criminal activity, improper installation, normal wear and tear, or to lack of maintenance. We shall in no event be liable for death, injuries to persons or property, or for incidental, contingent, special or consequential damages arising from the use of our product. This warranty is expressly in lieu of all other warranties, express or implied, including the warranties of merchantability and fitness.

†Temperature probes are not covered by warranty once used. They are warranted to work upon receipt, and should be tested by connecting them to the controller and powering it up *before* using them in a cooker.

To take advantage of this warranty, the product in whole must be returned to us with transportation charges prepaid. An RMA number from our website (pitmasterIQ.com/RMA.html), proof of purchase date and an explanation of the complaint must accompany the product. If our inspection verifies the defect, we will either repair or replace the product at our election or we may elect to refund the purchase price if we cannot readily and quickly provide you with a replacement. We will return repaired products at our expense, but if we determine there is no defect, or that the defect resulted from causes not within the scope of our warranty, then you must pay the cost of returning the product.

SPECIFICATIONS

- Blower speed control range: 5 FCM to 15 CFM
- Temperature regulation range: 150°F to 400°F
- Input power 12VDC at 1A
- Input power jack 2.1mm ID, 5.5 OD, center positive
- Operating temperature range: 0°F to 140°F
- Operating humidity range: 0% to 95% RH, non-condensing
- Standard manifold dimensions: 5-3/8" inside diameter, 6-1/2" outside diameter
- Air tube interface: 1" hose barb w/ 1" NPT threads



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