Instruction Manual

SYL-3615 Wi-Fi BBQ Controller

Firmware v1.1.86

Document version 1.0 (Jan, 2024)



- This controller is designed for use under normal operating conditions within
 the temperature range of 32°F to 122°F (0°C to 50°C) with a Relative
 Humidity of less than 85%. Please refrain from exposing the controller to
 water or rain, and avoid placing it under direct sunlight on hot days. When
 not in use, store the controller in a cool and dry environment.
- This controller comes with a one-year warranty, limited to the controller only.

1. Front Panel and Connection Ports



Figure 1. Front panel of a SYL-3615 controller.

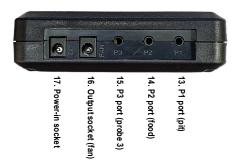


Figure 2. Connection ports on the bottom of a SYL-3615.

Table 1. Recognizing Different Parts on a SYL-3615.

#	Name	Description
1	LCD Display	Show probe readings and other information.
2	SET Key	* Short-press to access the cooking profile.
		* Long-press to access menus.
3	TIMER / BACK	* Check status (step number, time, and output).
	Key	* Cancel the Open-Lid function.
4	DOWN Key	* Mute the buzzer.
		* Scroll down in the menu.
		* Decrease the value.
5	UP Key	* Scroll up in the menu.
		* Increase the value.
6	Wi-Fi Indicator * Solid: connected to Wi-Fi and the serve	
		* Slow-blinking: lost connection.
		* Fast-blinking: ready to pair (AP mode).
7	Output Indicator	Display the output status to the fan.
8	Pit Probe	The probe that measures the pit temperature.
9	Food Probe	A pointed probe can be inserted into food.
10	Probe 3	A third probe for monitoring food temperature.
11	Fan Connector	DC connector from the fan, 2.5 mm x 5.5 mm.
12	Power Adapter	DC connector, 2.1 mm x 5.5 mm. Supplies 12
	Connector	VDC from the power adapter.
13	P1	Sensor port for the pit probe.
14	P2	Sensor port for the food probe.
15	P3	Sensor port for the third probe.
16	Output to Fan	Output port for the fan, 2.5 mm x 5.5 mm.
17	Power-In	Power input socket, 2.1 mm x 5.5 mm.

2. Getting Started

2.1 Powering Up the Device

Simply connect the 12 VDC power adapter to a wall outlet and then plug the barrel connector (2.1 mm x 5.5 mm) to the power-in socket located on the very left port at the bottom of the SYL-3615 controller (refer to Figure 2).

The controller's LCD screen should illuminate and display its model number and the firmware version (Figure 3a) for a few seconds. Subsequently, the LCD screen will change to the normal display mode (Figure 3b). The "-H-" is a sensor error code, which means no probe is connected or detected.

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Figure 3(a). The display screen when controller is just powered up.

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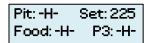


Figure 3(b). The display screen in normal operating mode.

2.2 Connecting Probes

Connect the pit probe to the P1 port, the food probe to the P2 port, and the third probe to the P3 port. The screen should display the readings from each probe in the designated areas, as shown in Figure 3 below.

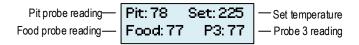


Figure 4. A SYL-3615 shows readings from all three probe and the set-temperature.

2.3 Plugging in the Fan

Connect the barrel connector from the fan (2.5 mm x 5.5 mm) to the second port from the left, marked as FAN (refer to Figure 2).

3. Getting Familiar with Different Display Modes

From the normal operating mode, users can access other display modes to check the status, switch to time-checking mode, edit the cooking profile, or change settings. The diagram below illustrates how to switch to these display modes.

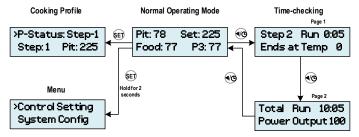


Figure 5. Switching to different display modes.

a) Time-Checking Mode

Press the **TIMER/BACK** key to check the current step number, step time, and the ending-criteria. Press the **TIMER** key one more time to check the total cooking time and the output percentage to the fan. Press the **TIMER** key again to return to the normal display mode.

b) Cooking Profile Mode

Press the SET key briefly to enter the Cooking Profile Setting Mode.

c) Menu Mode

Press and hold down the **SET** key for 2 seconds to bring up the menu: **Control Setting** and **System Configuration**.

4. Pairing a SYL-3615 to a Wi-Fi Router

Important: The Wi-Fi module in SYL-3615 can only connect to a 2.4 GHz Wi-Fi network. Please make sure your router broadcast 2.4 GHz Wi-Fi frequencies.

4.1 Download and Install the Latest AuberWiFi app

Please download and install the latest **AuberWiFi** app from the app store. Do NOT use the other app AuberSmart app for this device.

4.2 Set the Controller to Access Point (AP) Mode

The device can only be paired with your home router when it is in pairing mode, or Access Point (AP) mode. When you receive a new SYL-3615 from Auberins.com, the unit should be in the Wi-Fi pairing mode, indicated by the blue LED blinking rapidly.

To manually change the device to Wi-Fi pairing mode, press and hold the **SET** key for 2 seconds to bring up the menu. Navigate to the "**System Config**" sub-menu, scroll down to find "**Reset WiFi**", and select "**Yes**". The device will restart and reset to AP mode.

4.3 Pair a SYL-3615 to a Wireless Router

 Before opening the AuberWiFi app, please ensure that your phone is connected to a 2.4 GHz Wi-Fi signal from your router.

Note: This step is important because our app need to acquire the Wi-Fi name (SSID) and then send it to the SYL-3615 in a later step.

- b) Open the AuberWiFi app, tap the "add a device" button.
- c) On the next page, your home WiFi's name (SSID) should appear on the top line. Enter the Wi-Fi password and tap the "Connect Device" button.

Note: You can tap the eye icon to check if the password is entered correctly.

- d) Please read the pop-up message boxes and tap "CONTINUE" and the app will take you to the Wi-Fi Setting page of your phone.
- e) On a list of the available Wi-Fi signals, find the one starts with "AuberWiFi_" and followed by 12 numbers and letters. This Wi-Fi signal is generated by the SYL-3615 for pairing purpose and it doesn't provide internet connection. No password is needed.

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Important Tip: Your phone may recognize that this wireless signal from SYL-3615 has "no internet access" and may want to switch to use mobile data or a different Wi-Fi signal. If your phone prompts such a notification on the top of the screen, please tap on it and select YES to stay connected.

- f) Once connected to the "AuberWiFi_xxxxxxxxxxxx" Wi-Fi signal, click the "Continue" button on the lower-right corner or manually switch back to AuberWiFi app if you are an iPhone user.
- g) The next pop-up message box will ask you to confirm that your phone has connected to the Wi-Fi signal generated by the SYL-3615. Tap CONFIRM to go ahead with the paring process.
- h) Once you tap on the CONFIRM button, the SSID and password will be sent to the SYL-3615 so that it can log on to your 2.4 GHz Wi-Fi network.
- i) If the pairing process is successful, the SYL-3615 will restart and the blue LED will turn to solid. That means the device has been connected to your router. In the meantime, the app will return to the Device List page and a new SYL-3615 will appear on this page.
- j) If the pairing process is unsuccessful, the App will remain on the Add Device page. Please try again, and making sure you check if the SSID is the desired wireless signal you want to connect, if the password is correct, and wait a little bit long at step (g) till the "no internet access" notification appears.

5. Programming a Cooking Profile

5.1 Single-Step Mode

By default, the SYL-3615 is initially configured to operate in single-step mode with a set-temperature at 225°F. This means the controller will attempt to maintain the pit temperature at 225°F indefinitely.

Note: In single-step mode, the **Start** and **Stop** function in the "**P-Status**" (Program Status) parameter do NOT work.

To change the set temperature in single-step mode, short-press the **SET** key on a SYL-3615 to access the cooking-profile menu. Navigate the cursor to "Step:1" and press the **SET** key to enable editing the value. Once you've finished editing the set value, press the SET key again to save the new value. Use the **BACK** key to return to the normal operating mode.

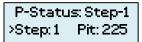


Figure 6. Move the cursor to Step 1 to edit the set value in the single-step mode.

5.2 Multi-Step Mode

To enable the multi-step cooking profile, please go to the System Configuration menu and change the parameter **PRG** to **ON**.



Figure 7. Change PRG to ON to enable the multi-step mode.

5.3 Multi-Step Cooking Profile

You can program up to 6 steps in a cooking profile, with each step involving four parameters: pit temperature, ending criteria, step timer, or food temperature. The table below explains how the settings in each parameter affect the execution of a cooking step. Refer to Figure 8 for a flow chart of how the parameters in a cooking step influence the cooking process.

Table 2. Factors Involved in a Cooking Step.

Name	Range	Description		
Pit	-99°F ~ 999°F	The set value of pit temperature of the current		
FIL	-99 F ~ 999 F	step.		
	Food Temp	To end the current step when food probe		
	Food Tellip	reading reaches a desired temperature.		
Ending	Time	To end the current step by cooking time.		
	End	To end the entire cooking. The rest of steps in		
		this cooking profile will be ignored.		
Timer	0:00 ~ 23:59	Cooking time, if the current step will end by		
illiei	(hh:mm)	"Time".		
Food	-99°F ~ 999°F	Target food temperature, if the current step		
FUUU	-33 F - 333 F	will end by food temperature.		

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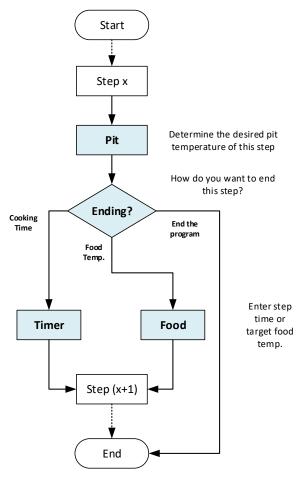


Figure 8. Flow chart on how the parameters of a cooking step works.

6. Accessing the Menu

To access the menu, press and hold the **SET** key for 2 seconds.

6.1 Control Settings

The parameters listed in the Control Setting menu are provided in the table below. Refer to the following notes for details on each parameter.

Table 3. Parameters in Control Setting.

Name	Description	Range	Default	Note
Pit-AH	Pit High Alarm	0 ~ 999	350	1
Pit-AL	Pit Low Alarm 0 ~ 999 50		2	
Food-AH	Food High Alarm	0 ~ 999	350	3
Probe3-AH	Probe 3 High Alarm	0 ~ 999	350	3
Р	Proportional Constant	1 ~ 999	45	4
I	Integral Time 0 ~ 9999 1200		5	
D	Derivative Time	0 ~ 999	75	6
T	Control Cycle Time	2 ~ 200	15	7
MODE	Control Mode	Manual-FS, Manual-TP, PID-FS, PID-TP	PID-FS	8

Save	Save PID Settings	(Back), BGE, WSM22, WSM18, 4,5,6	Back	9
Recall	Recall PID Settings	(Back), BGE, WSM22, WSM18, 4,5,6	Back	9
Back	Back to the main menu			

Note 1. Pit-AH is the high-limit alarm for the pit probe temperature. When the pit temperature exceeds the **Pit-AH** value, the alarm is triggered. A 3° hysteresis band is incorporated for temperature alarms. Users can mute the device's buzzer by pressing the **DOWN** (▼) arrow key or using the Mute icon on the AuberWifi app.

Note 2. Pit-AL is the low-limit alarm for the pit probe temperature. When the pit temperature falls below the **Pit-AH** value, the alarm is triggered. A 3° hysteresis band is applied to temperature alarms. It's important to note that the **Pit-AL** alarm is suppressed when the controller is just powered up and has not yet reached the set temperature.

Note 3. Food-AH and **Probe3-AH** serve as high-limit temperature alarms for the Food Probe (Probe 2) and Probe 3, respectively. They operate similarly to the **Pit-AH**.

are the high-limit temperature alarm for Food Probe and Probe 3 respectively. They work in the same way as the **Pit-AH**.

Note 4. P is the proportional constant, measured in degrees Fahrenheit (°F) or Celsius (°C). This parameter determines the proportional output based on the difference between the measured and set temperatures. A larger P value signifies a weaker action or lower gain. For example, if P = 7, the proportional band is 7 degrees. When the temperature reading is 10 degrees below the set value (SV), which is 3 degrees outside the proportional band, the proportional part of the output will be 100%. If the sensor reading is 5 degrees below the set value (SV), 2 degrees above the proportional band, the proportional part of the output will be 71%. When the sensor reading equals the set point, the controller will have 0% output from its proportional part. This constant also affects both integral and derivative actions. A smaller P value makes both integral and derivative actions stronger. It's important to note that the P value is temperature unit-sensitive. If an optimized P value is found when operating the controller in Fahrenheit, one needs to divide the P value by 1.8 when changing the temperature unit to Celsius.

Note 5. I is the Integral Time, measured in seconds. This parameter determines the integral output based on the difference between the measured and set temperature integrated over time. For instance, if I = 1000, it means that if the temperature difference between the pit temperature and set temperature remains constant, the output will double after 1000 seconds. Integral action is utilized to eliminate temperature offset. A larger value for I results in a slower integral action.

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Note 6. D is the Derivative Time, measured in seconds. The derivative action contributes to the output power based on the rate of temperature change. A larger **D** value results in stronger derivative action. The derivative action adjusts the output based on the rate of change rather than the net amount of change. This allows the controller to respond more promptly.

Note 7. T is the Control Cycle Time, measured in seconds. By default, the Control Cycle **T** is set to 15 seconds. This parameter determines how frequently the controller updates the output. For instance, if the current output is 18%, and the controller calculates that it needs to increase the output to 22%, it will wait till the end of the current control cycle. Once the next 15-second cycle begins, the controller will adjust the output to 22%. This control cycle applies to both the Fan Speed (FS) Control Mode and the Time Proportional (TP) Control Mode.

Note 8. The **MODE** setting allows users to choose from one of the four control modes listed below:

- a) Manual-FS: The user can manually determine the output level; the controller adjusts the output level by changing the fan-speed (FS).
- b) **Manual-TP**: The user can manually determine the output level; the controller adjust the output level by Time Proportional (TP) method.
- PID-FS: The PID algorithm determines the output level; the controller changes the output level by adjusting the fan-speed (FS).
- d) PID-TP: The PID algorithm determines the output level; the controller changes the output level by Time Proportional (TP) method.

In Fan Speed (**FS**) mode, the fan speed is adjusted by changing the output voltage to the fan within the range of 4VDC to 12VDC.

In Time Proportional (**TP**) mode, the output level is adjusted by changing the percentage of time that the fan will be running.

Note 9. The Save and Recall functions allow users to save or recall the P, I, D, and Control Mode settings to/from a specified saving slot, with a total of 6 sets available. Users can tune PID parameters and choose different Control Modes for various cooking conditions (e.g., different smokers/grills, ambient temperatures, or target cooking temperatures) and save them for future use. Refer to Table 4 for the name, P, I, D, and Mode settings in each parameter set.

The first three sets are named "BGE", "WSM22", and "WSM18", pre-tuned for the 18.5" Big Green Egg, 22.5" Weber Smokey Mountain, and 18.5" Weber Smokey Mountain, respectively. The other three sets, named "4", "5", and "6", are available for custom-tuned parameter settings. However, their names cannot be changed.

To save current PID parameters and Control Mode, navigate to "Control Setting", use the ▼ key to find "Save", press the SET key to make the word "Back" flash on the right side of the screen, use ▲ or ▼ keys to select the desired group name for saving the settings, then press the SET key again to save the settings.

To recall a set of parameters and Control Mode, go to "Control Setting", use the ▼ key to find "Recall", press the SET key to make the word "Back" flash on the right side of the screen, use ▲ or ▼ keys to select the desired group name from which to recall the settings, then press the SET key again to recall the settings for the current cooking process.

Table 4. The default values of the saved PID and Mode Settings.

Group #	Group Name	Р	I	D	Mode
1	BGE	45	1200	75	PID-TP
2	WSM22	45	1200	75	PID-FS
3	WSM18	45	1400	100	PID-FS
4	4	45	1200	75	PID-FS
5	5	45	1200	75	PID-FS
6	6	45	1200	75	PID-FS

6.2 System Configuration

The parameters in the System Configuration menu are listed in the table below, with details for each parameter explained in the following notes.

Table 5. Parameters in System Configuration.

Name	Description	Range Default		Note
PRG	Multi-Step Program Mode	ON, OFF OFF		10
OL- Detection	Open-Lid Detection	ON, OFF	ON	11
FMRV	Minimum Running Voltage of the Fan	3.0 V ~ 11.0 V	4.0	12
OUTH	Output High-Limit	0 ~ 100 (%)	100	13
OUTL	Output Low-Limit	0 ~ 100 (%)	0	13
C-F	Temperature Unit	°C, °F	F	14
PB1	Probe 1 Offset	-99 ~ 100	0	15
PB2	Probe 2 Offset	-99 ~ 100	0	15
PB3	Probe 3 Offset	-99 ~ 100	0	15
Buzzer	Enable or Disable the On-Board Buzzer	On, Off	On	16
nFIL	Powerline Filter	A, B, Auto	В	17
Brightness	LCD Back-Light Brightness	0 ~ 10	10	18
Push Alarm	Enable Pushing Temperature Alarms to a Paired Mobile Device	On, Off	On	19
Push Step	Enable Pushing Step Notifications to a Paired Mobile Device	On, Off	On	20
Reset	Restore All Parameters to Factory Default Values	Yes, No	s, No No	
Reset WiFi	Reset Wi-Fi Module to AP Mode (Pairing Mode)	Yes, No	No	22
Update	Check and Update Device Firmware	Yes, No No		23
Back	Back to the Main Menu			

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Note 10. PRG parameter allows users to enable or disable the multi-step cooking program. By default, **PRG** is set to "**OFF**" and this controller operates in single-step mode. To enable the multi-step mode, change parameter **PRG** to "**ON**". For detailed information on multi-step mode, please refer to Section 5.3.

Note 11. OL-Detection is a parameter to enable to disable the Open-Lid Detection feature, which automatically pause the fan if the controller detects a significant temperature drop caused by opening the lid. By default, this feature is enabled and the **OL-Detection** is set to "**ON**". For more details on the Open-Lid Detection, please refer to Section 9.1.

Note 12. FMRV, or Fan Minimum Running Voltage, allows users to set the minimum output voltage for the connected fan when the output is at 1%. This parameter only affects Fan-Speed Control Mode. The default **FMRV** setting is 4.0 V, a value recommended for blowers sold by Auber Instruments. Typically, there is no need to adjust this parameter when using the controller on an uninsulated metal wall smoker (such as a Weber Smokey Mountain smoker).

However, due to variations in the friction of bearings among different fans or blowers, the minimum voltage required to overcome kinetic friction may differ between models or as the bearings age. In such cases, it might be necessary to adjust the **FMRV**. For instance, if the controller's output percentage is at 0%, but the pit temperature remains above the set point for more than 20 minutes, the fan might still be running. In such a scenario, you can switch to Manual Fan-Speed mode (**Manual-FS**), set the output to 1%, and gradually reduce the **FMRV** value until the fan is barely running.

Note 13. OUTH and **OUTL** represent the Output High Limit and Output Low Limit, respectively. These two parameters allow users to set a maximum output percentage and a minimum output percentage for a fan. Both parameters can be configured within the range of 0% to 100%, with the condition that **OUTH** must be greater than **OUTL**.

Note 14. C-F is the setting for temperature unit. The temperature can be displayed either in Celsius (°C) or in Fahrenheit (°F).

Note 15. Pb1, Pb2, and Pb3 are probe calibration offset values for Probe 1 (pit probe), Probe 2 (food probe), and Probe 3 (food probe) respectively. The calibration offset value will be added to the raw probe reading to give the final reading. For example, if the Probe 1 (pit probe) reads 33°F in an ice/water bath, which is 1°F degree higher than what we think it should be (32°F), you can set **Pb1** = -1.0.

Note 16. Buzzer is the setting that allows users to enable or disable the buildin buzzer in the controller. By default, the **Buzzer** is set to "**ON**" to enable the on-board buzzer.

Note 17. nFIL is the Powerline Filter setting. Set this parameter to "A" for 50Hz power frequency, "B" for 60Hz power frequency, or "Auto" for autodetection. By factory default, this powerline filter is set to "B" for 60Hz.

Note 18. Brightness is the parameter for adjusting the LCD screen backlight. It can be set between 0 and 10, with 10 being the brightest.

Note 19. Push Alarm is the parameter to enable or disable notifications for temperature alarms being pushed to a paired mobile device. By default, the

Push Alarm is set to "On", allowing temperature alarms to be pushed to a paired mobile device.

Note 20. Push Step is the parameter enables or disables notifications for cooking steps being sent to a paired mobile device. Notifications are sent when a cooking step is finished or when the entire cooking program is completed. By default, **Push Step** is set to "On", allowing step event notifications being pushed to a paired mobile device.

Note 21. Reset is the action that restores all parameters to their factory default values. Selecting 'Yes' to **Reset** prompts the device to reboot, reverting all settings to their original factory state. It's important to note that this action does not impact the WiFi connection.

Note 22. Reset WiFi is the action that puts the WiFi module into WiFi pairing mode, also known as Access Point mode. This action doesn't affect the parameter settings. Upon selecting "Yes" to **Reset WiFi**, the device will reboot, and the blue LED indicator should start blinking rapidly, indicating that the device is ready to pair with a mobile device.

Note 23. Update is the action to check for and install a new firmware version if available. Please ensure the device has a stable WiFi connection and a reliable power supply during this process.

7. Using and Mounting the Controller

7.1 Operating Temperature

The operating environment temperature for the controller is from 32°F \sim 122°F (0°C \sim 50°C). The controller should be placed away from the heat from a smoker/grill to protect the plastic housing and electronics. Please also avoid exposing the controller under directly sunlight during hot summer days.

7.2 Protect the Controller from Rain

The case is not water-proof. If you want to use under light rain even for a short period, it's better to cover the controller with a transparent and waterproof bag or a container. Please also lift the controller from the ground or any surface that may cause splashed water get into the case from the bottom of the controller.

7.3 Mounting Hooks

Two mounting hooks and two M4 screws are supplied with the controller. These hooks can be installed as shown in Figure 9 and 10.

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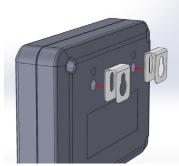


Figure 9. How to install the mounting hooks to SYL-3615.



Figure 10. Two mounting hooks installed on the back of a SYL-3615 controller.

8. FAQs

8.1 A probe shows "-H-" when it is plugged in.

The "-H-" is a probe input error message, which usually indicates that no probe is connected or the probe is defective. Plug this probe to another sensor port or plug a good probe to this port to see if the error code follows the probe or stays with the sensor port.

8.2 A probe reading appears to be jumping round.

Please swap with another good probe to see if the issue moves with the probe or stays with the probe socket. If the probe connector is loose, the wires inside the probe is broken or about to break, the reading may jump around.

8.3 How to clean the probes.

Do NOT wash the probe. Only wipe the probe's stainless-steel sheath with damped paper towel or cloth. Please also keep water out of the probe connector as well.

8.4 Can I leave the controller, the fan, and the probes on the smoker after each cooking?

No, please do NOT leave them outside on the smoker. After each use, keep them in a dry and cool environment.

8.5 What if I have one cooking step ends with food temperature but I have no plugged in a food probe?

If a cooking step's ending criteria is food temperature, however, no food probe is plugged in, the controller will still maintain the pit temperature but this step will never end.

9. Additional Reading

9.1 Open-Lid Detection

When the lid of a smoker is opened during cooking, the pit temperature will drop significantly and quickly. The derivative part of the PID algorithm (D) reacts to this substantial temperature change, increasing the output and causing the blower to run, potentially at maximum speed, to counteract the temperature drop. This action may result in blowing up ashes, intensifying the flame, and causing a significant temperature overshoot after the lid is closed.

The Open-Lid Detection function is specifically designed to prevent these issues. When the smoker's lid or dome is opened, this function detects the sudden temperature drop and halts the blower. After the lid is closed, and the pit temperature is restored through the residual heat in the smoker, the blower resumes operation. However, if after 7 minutes the temperature hasn't fully recovered, the controller resumes sending output to the blower.

This Open-Lid Detection function is inactive when initially starting the fire. It becomes operational once the pit temperature is less than 5 degrees lower than the set temperature. While the open-lid detection might be triggered accidentally by a temperature drop unrelated to lid-opening during smoking, you can cancel this activation by pressing the TIME/BACK key on the controller or tapping the 'X' (Cancel) symbol near 'Open-Lid Detection' on the SYL-3615 device info page in the AuberWiFi app.

In situations where the Open-Lid Detection is activated by an actual lidopening action, it is recommended not to cancel this function to avoid experiencing a pit temperature overshot. The controller can manage this issue and minimize disturbance. However, if you are cooking at a higher temperature range (> 300°F), and the pit temperature may not recover by itself, it's advisable to cancel the activation in such cases.

If you want to manually pause the fan output temporarily, you can unplug the fan connector from the controller. To resume the fan output, plug the fan's connector back into the controller.

(End)

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