XYZ Corp.
Fry Controller FC-1234
Software Test Procedure

Last Modified: 00/00/0000

Version Tested:	
Date Tested:	
Technician:	
Results:	

Contents

Introduction

The state tables are to be used as the basis for resolving any questions regarding intended behavior of the product.

The machine logic moves from state to state as a result of various inputs or events.

States are designated such as **ST-Cooking**, etc.
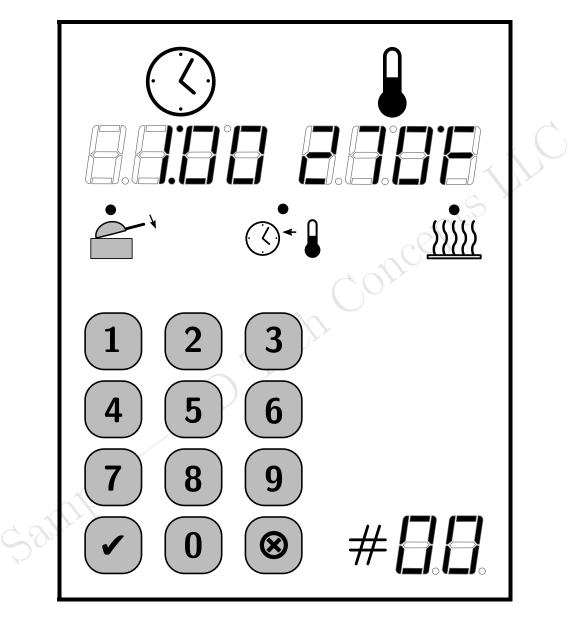
Testing Procedures

- For each state, a chart lists Inputs/Outputs/Events, plus associated values or actions to take for each.

- A check box is provided for each item to be tested and/or verified.

- Empty items "—" should still be verified that no action occurs in this circumstance.

- Test equipment will be required to simulate various error conditions. Refer to schematic.

- A full listing of all possible states is provide at the end of this procedure to resolve any questions about the exact behaviors to expect.

Interface

Front Panel

This is a diagram of the front panel display and keypad.

Settings

The following items are chosen by the operator:

- Cooking time, 00:00 to 99:59, meaning 99 minutes and 59 seconds.

- Cooking temperature in ˚F or ˚C.

- Auto-Compensation On/Off, controlling whether cooking time is adjusted according to the current operating temperature. If auto-compensation is turned on, the unit will adjust the cooking time

depending on how the oil temperature compares to the recipe. If turned off, the unit will cook for exactly the time chosen by the recipe, even if the oil is not quite at the correct temperature.

- Nine presets are stored in memory for quick recall. Each preset has a time, a temperature, and an auto-compensation On/Off choice. From the factory they are initialized to $270\,^\circ$F, one minute, auto compensation off.

The following is automatically recorded by the unit:

- Count of the number of cycles completed, 0-99, wrapping to 01. This counter helps determine when to filter or change the oil.

Outputs

Displayed on the front panel for the user:

- Time display, ○ from 00:00 to 99:59.
- Temp display, ⌀ in $^\circ$F or $^\circ$C, showing setpoint or current temperature.
- Count display, # of number of cycles performed, 0-99.
- Auto Compensation indicator ○⌀. If On, cook time varies depending on temperature.
- Valve indicator ☚. On if valve is closed and the unit is cooking.
- Heater indicator ⌇. Shows whether heat is being applied.

Additional items which are located inside the unit:

- Speaker. Beeps On/Off when finished cooking, or steadily On in the event of an error condition.
- Heater control. Controls the heater for the cooker.

Inputs

User-input keys which are found on the front panel:

- ⓪ – ⑨ keys. Used to enter values, select presets, select log entries.
- Select ✔. Accepts edits or procedures.
- Cancel ⊗. Cancels edits or procedures.

Internal to the unit, and not user-adjustable.

- Thermocouple probe to monitor temperature.
- Input for probe over temperature error.
- On-board ambient temperature sensor.
- Input for ambient temperature sensor failure.
- $^\circ$F / $^\circ$C selection is via a jumper located on the control's circuit board. This is set by the factory.
- **Start** input. Closed during cooking, opened to finish or cancel cooking. This is used to sense when the pressure fryer valve lid is closed to start cooking.

Other Events

The following items are additional events which may cause something to happen:

- Timeouts for 5 or 25 seconds without a key press. If nothing is happening, the unit cancels any special displays or edits and returns to is default idle display.

- Several combinations of keys being held for various amounts of time. These are used to enter special modes which are intended for special functions, not day-to-day operation.

- Error conditions. The unit continuously watches for several possible kinds of error conditions.

Idle

Specification

On power-up, the heater becomes active and regulates to the currently selected preset's temperature, and the heater LED 〰 lights whenever the heater is active.

If the current temperature is within regulating range, the display shows ▯▯▯▯ ▯▯▯▯, where 9 is the preset number 1-9.

If the current temperature is too hot or too cold compared to the current preset, the display alternates between ▯▯▯▯ with the preset temperature, and ▯▯▯▯ or ▯▯▯▯ with the current temperature.

The counter displays the count of the cycles completed.

Test

> **ST-Idle**
> **Run heater, show hot/cold and temp or show ready preset.**
>
> ☐ Time Display: ▯▯▯▯, or alternating ▯▯▯▯ and ▯▯▯▯ or ▯▯▯▯
> ☐ Temp Display: ▯▯▯▯, or alternating preset temp and current temp
> ☐ Count Display: Counter. Default 0 with new rom.
> ☐ Valve LED: Off
> ☐ Auto Comp. LED: Off
> ☐ Heat LED: Regulates to setpoint $+0°$F, $-4°$F.
> ☐ Heater: Regulates to setpoint $+0°$F, $-4°$F.
> ☐ Speaker: —
> ☐ 5 Seconds Pass: —
> ☐ 25 Seconds Pass: —
> ☐ *Start* Closed: **ST-Cooking**
> ☐ *Start* Opened: —
> ☐ ⓪ – ⑨ Pressed: **ST-View-Preset**
> ☐ ✔ Pressed: —
> ☐ ⊗ Pressed: —
> ☐ ① – ⑨ Held 5 sec: **ST-Show-Time**
> ☐ ⓪ Held 10 sec: **ST-Start-Adjust-Calib**
> ☐ ✔ Held 10 sec: **ST-Start-Error-Log**
> ☐ ⊗ Held 10 sec: Clear counter.

☐ Default of 1:00 time with a new ROM.

☐ Default of 270°F temp with new ROM.

☐ If the current temperature is too hot or too cold compared to the current preset, the display alternates between ▯▯▯▯ with the preset temperature, and ▯▯▯▯ or ▯▯▯▯ with the current temperature.

☐ If the current temperature is within regulating range, the display shows ▯▯▯▯ ▯▯▯▯, where 9 is the preset number 1-9.

☐ Verify both °F and °C display and heater operation.

☐ The counter displays the count of the cycles completed.

☐ Verify that if a ① – ⑨ key is held *less* than five seconds, does not show the preset.

☐ Verify that if ⓪ is held *less* than ten seconds, does not adjust the factory calibration.

☐ Verify that if Select ✔ is held *less* than ten seconds, does not show the error log.

☐ With one or more count on the cycle counter, verify that if Cancel ⊗ is held *less* than ten seconds, does not clear the cycle counter.

Cooking Cycle

Specification

Close the Start switch to begin a cooking cycle with the current preset, even if the temperature is not yet ready.

The valve LED ☞` turns on to indicate that the fryer is closed and cooking.

The timer counts down, and is adjusted according to temperature if auto compensation ◷⁻🌡 is selected in the current preset.

All keypad keys are disabled.

Cooking continues so long as the Start switch is closed. If the Start switch is opened during cooking, the unit immediately returns to Idle and does NOT increment the count.

When time is complete, food continues to cook but the timer flashes ⊟⊟⊟⊟ and sounds the speaker.

When the Start switch is opened, the counter # is incremented by one, wrapping 99 to 01, and the unit returns to the Idle state.

When enabled, auto compensation is as follows:

$$t_f = t_r \times \frac{(T_s - T_b)}{(T_c - T_b)}$$

t_f	Flex time — up to half or twice real time.
t_r	Real time
T_s	Temperature — setpoint
T_c	Temperature — current
T_b	Temperature — boiling point of water at sea level — 212°F

Test

ST-Cooking
☞` lit, ◷⁻🌡 according to preset, timer counts down.

☐	Time Display:	Remaining time.
☐	Temp Display:	Cooking temp.
☐	Count Display:	Counter
☐	Valve LED:	On
☐	Auto Comp. LED:	According to preset.
☐	Heat LED:	Regulates to setpoint $+0^\circ$F, -4°F.
☐	Heater:	Regulates to setpoint $+0^\circ$F, -4°F.
☐	Speaker:	—
☐	5 Seconds Pass:	—
☐	25 Seconds Pass:	—
☐	**Start** Closed:	—
☐	**Start** Opened:	**ST-Idle**
☐	⓪ – ⑨ Pressed:	—
☐	✔ Pressed:	—
☐	⊗ Pressed:	—
☐	① – ⑨ Held 5 sec:	—
☐	⓪ Held 10 sec:	—
☐	✔ Held 10 sec:	—
☐	⊗ Held 10 sec:	—

When time is complete, goes to **ST-Finished**.

ST-Finished
Flash ⯎⯎⯎⯎ and sound the speaker.

☐	Time Display:	⯎⯎⯎⯎
☐	Temp Display:	Cooking temp.
☐	Count Display:	Counter
☐	Valve LED:	On
☐	Auto Comp. LED:	According to preset.
☐	Heat LED:	Regulates to setpoint $+0°$F, $-4°$F.
☐	Heater:	Regulates to setpoint $+0°$F, $-4°$F.
☐	Speaker:	Beeping – 1/2 duty cycle
☐	5 Seconds Pass:	—
☐	25 Seconds Pass:	—
☐	*Start* Closed:	—
☐	*Start* Opened:	**ST-Idle**
☐	⓪ – ⑨ Pressed:	—
☐	✔ Pressed:	—
☐	⊗ Pressed:	—
☐	① – ⑨ Held 5 sec:	—
☐	⓪ Held 10 sec:	—
☐	✔ Held 10 sec:	—
☐	⊗ Held 10 sec:	—

☐ Verify timing accuracy over several minutes.

☐ When timer completes and are finished cooking, moves to **ST-Finished** state.

☐ Verify auto compensation operation with extra high or low current temps.

$$t_f = t_r \times \frac{(T_s - T_b)}{(T_c - T_b)}$$

t_f Flex time — up to half or twice real time.
t_r Real time
T_s Temperature — setpoint
T_c Temperature — current
T_b Temperature — boiling point of water at sea level — $212°$F

Displaying and Selecting Presets

Specification

While Idle, press Select ✔ to display the time, temperature, and auto compensation settings for the currently selected preset. The unit returns to Idle after five seconds.

While Idle, press a key ① – ⑨ to display that preset's settings for five seconds.

Press another key ① – ⑨ to display a different preset.

Press Select ✔ to switch to the selected preset. The unit returns to Idle.

Press Cancel ⊗ during the five seconds to instantly return the unit to Idle.

Test

ST-View-Preset
Display settings for one preset.

☐	Time Display:	Time for the preset.
☐	Temp Display:	Temp for the preset.
☐	Count Display:	Counter
☐	Valve LED:	Off
☐	Auto Comp. LED:	Auto comp. for the preset.
☐	Heat LED:	Regulates to setpoint $+0^\circ$F, -4°F.
☐	Heater:	Regulates to setpoint $+0^\circ$F, -4°F.
☐	Speaker:	—
☐	5 Seconds Pass:	**ST-Idle**
☐	25 Seconds Pass:	—
☐	***Start*** Closed:	**ST-Cooking**
☐	***Start*** Opened:	—
☐	⓪ – ⑨ Pressed:	Show another preset.
☐	✔ Pressed:	Choose this preset and return to **ST-Idle**.
☐	⊗ Pressed:	**ST-Idle**
☐	① – ⑨ Held 5 sec:	—
☐	⓪ Held 10 sec:	—
☐	✔ Held 10 sec:	—
☐	⊗ Held 10 sec:	—

☐ Edit two presets with different values, then verify that from idle, ① – ⑨ shows different presets.

☐ Verify that ① – ⑨ followed by Select ✔ changes to the new preset. Start a cycle for each of two different presets, and verify that the time and temp has been changed to each preset value.

Editing a Preset

Specification

1. While Idle, hold a key ① – ⑨ for five seconds. The speaker beeps and begins to edit that preset.

2. The display flashes the current time for this preset. Press Select ✔ to keep this time and move to temperature, or press Cancel ⊗ to exit with no changes, or:

3. Enter a new time, and then press Select ✔ to accept the new time and again display flashing time, or Cancel ⊗ to cancel the edit and return to flash the preset's current time.

4. The display flashes the current temperature for this preset. As above, enter a new temperature with Select ✔, or use Cancel ⊗ to exit with no changes.

5. The display flashes 𝟘𝟘𝟘𝟘 𝟘𝟘𝟘𝟘 or 𝟘𝟘𝟘𝟘 𝟘𝟘𝟘𝟘. Press Select ✔ to accept, Cancel ⊗ to exit with no changes, or press any key ⓪ – ⑨ to toggle On/OFF.

6. The display flashes all final values at once. Press Select ✔ to accept all new changes, or Cancel ⊗ to exit with no changes.

At any time during editing, if the Start switch is closed, the unit immediately goes into Cooking mode using the previous values. If 25 seconds pass, the unit returns to Idle without changing the preset.

Test

ST-Show-Time	
Flash the current time for this preset. Select, cancel, or enter new time.	
☐ Time Display:	Flash time for this preset.
☐ Temp Display:	Blank
☐ Count Display:	Blank
☐ Valve LED:	Off
☐ Auto Comp. LED:	Auto comp. for this preset.
☐ Heat LED:	Off
☐ Heater:	Off
☐ Speaker:	Off
☐ 5 Seconds Pass:	—
☐ 25 Seconds Pass:	**ST-Idle**
☐ **Start** Closed:	**ST-Cooking**
☐ **Start** Opened:	—
☐ ⓪ – ⑨ Pressed:	**ST-Edit-Time**
☐ ✔ Pressed:	**ST-Show-Temp**
☐ ⊗ Pressed:	Cancel changes, go to **ST-Idle**
☐ ① – ⑨ Held 5 sec:	—
☐ ⓪ Held 10 sec:	—
☐ ✔ Held 10 sec:	—
☐ ⊗ Held 10 sec:	—

ST-Edit-Time
Enter the current time for this preset. Select or cancel.

☐	Time Display:	Time for this preset.
☐	Temp Display:	Blank
☐	Count Display:	Blank
☐	Valve LED:	Off
☐	Auto Comp. LED:	Auto comp. for this preset.
☐	Heat LED:	Off
☐	Heater:	Off
☐	Speaker:	Off
☐	5 Seconds Pass:	—
☐	25 Seconds Pass:	**ST-Idle** with no changes.
☐	*Start* Closed:	**ST-Cooking** with no changes.
☐	*Start* Opened:	—
☐	⓪ – ⑨ Pressed:	Collect time digits.
☐	✔ Pressed:	Change the time, then **ST-Show-Time**
☐	⊗ Pressed:	Cancel changes, then **ST-Show-Time**
☐	① – ⑨ Held 5 sec:	—
☐	⓪ Held 10 sec:	—
☐	✔ Held 10 sec:	—
☐	⊗ Held 10 sec:	—

ST-Show-Temp
Flash the current temp for this preset. Select, cancel, or enter new temp.

☐	Time Display:	Blank
☐	Temp Display:	Flash temp for this preset.
☐	Count Display:	Blank
☐	Valve LED:	Off
☐	Auto Comp. LED:	Auto comp. for this preset.
☐	Heat LED:	Off
☐	Heater:	Off
☐	Speaker:	Off
☐	5 Seconds Pass:	—
☐	25 Seconds Pass:	**ST-Idle**
☐	*Start* Closed:	**ST-Cooking**
☐	*Start* Opened:	—
☐	⓪ – ⑨ Pressed:	**ST-Edit-Temp**
☐	✔ Pressed:	**ST-Show-Autocomp**
☐	⊗ Pressed:	Cancel changes, go to **ST-Idle**
☐	① – ⑨ Held 5 sec:	—
☐	⓪ Held 10 sec:	—
☐	✔ Held 10 sec:	—
☐	⊗ Held 10 sec:	—

ST-Edit-Temp
Enter the current temp for this preset. Select or cancel.

☐	Time Display:	Blank
☐	Temp Display:	Temp for this preset.
☐	Count Display:	Blank
☐	Valve LED:	Off
☐	Auto Comp. LED:	Auto comp. for this preset.
☐	Heat LED:	Off
☐	Heater:	Off
☐	Speaker:	Off
☐	5 Seconds Pass:	—
☐	25 Seconds Pass:	**ST-Idle** with no changes.
☐	*Start* Closed:	**ST-Cooking** with no changes.
☐	*Start* Opened:	—
☐	⓪ – ⑨ Pressed:	Collect temp digits.
☐	✔ Pressed:	Change the temp, then **ST-Show-Autocomp**
☐	⊗ Pressed:	Cancel changes, then **ST-Show-Temp**
☐	① – ⑨ Held 5 sec:	—
☐	⓪ Held 10 sec:	—
☐	✔ Held 10 sec:	—
☐	⊗ Held 10 sec:	—

ST-Show-Autocomp
Flash the current auto comp. for this preset. Select, cancel, or enter new temp.

☐	Time Display:	Flash 🄰🄰🄰🄰 🄰🄰🄰🄰 or 🄰🄰🄰🄰 🄰🄰🄰🄰.
☐	Temp Display:	Flash 🄰🄰🄰🄰 🄰🄰🄰🄰 or 🄰🄰🄰🄰 🄰🄰🄰🄰.
☐	Count Display:	Blank
☐	Valve LED:	Off
☐	Auto Comp. LED:	Flash auto comp for this preset.
☐	Heat LED:	Off
☐	Heater:	Off
☐	Speaker:	Off
☐	5 Seconds Pass:	—
☐	25 Seconds Pass:	**ST-Idle**
☐	*Start* Closed:	**ST-Cooking**
☐	*Start* Opened:	—
☐	⓪ – ⑨ Pressed:	Toggle auto compensation.
☐	✔ Pressed:	Accept auto comp edit, go to **ST-Show-Preset**
☐	⊗ Pressed:	Cancel changes, go to **ST-Idle**
☐	① – ⑨ Held 5 sec:	—
☐	⓪ Held 10 sec:	—
☐	✔ Held 10 sec:	—
☐	⊗ Held 10 sec:	—

ST-Show-Preset
Flash the current time and temp and auto comp for this preset. Select or cancel.

☐	Time Display:	Flash time for this preset.
☐	Temp Display:	Flash temp for this preset.
☐	Count Display:	Blank
☐	Valve LED:	Off
☐	Auto Comp. LED:	Flash auto comp. for this preset.
☐	Heat LED:	Off
☐	Heater:	Off
☐	Speaker:	Off
☐	5 Seconds Pass:	—
☐	25 Seconds Pass:	**ST-Idle**
☐	*Start* Closed:	**ST-Cooking**
☐	*Start* Opened:	—
☐	⓪ – ⑨ Pressed:	—
☐	✔ Pressed:	Set preset's values, go to **ST-Idle**
☐	⊗ Pressed:	Cancel all edits, go to **ST-Idle**
☐	① – ⑨ Held 5 sec:	—
☐	⓪ Held 10 sec:	—
☐	✔ Held 10 sec:	—
☐	⊗ Held 10 sec:	—

☐ Verify high and low temperature limits to values being entered, 270°F – 375°F, 132°C – 191°C.

☐ Verify both $^\circ$F and $^\circ$C entry.

☐ Verify uses only the 3 most recently entered digits for temperatures.

☐ Verify high and low limits to time values being entered, 1 second to 99:59.

☐ Verify uses only the 4 most recently entered digits for times.

Clearing the Counter

Specification

While Idle, hold the Cancel ⊗ button for ten seconds to clear the counter. The counter is reset to 00.

Test

☐ Run a cooking cycle to create a non-zero counter.

☐ While Idle, hold the Cancel ⊗ button for ten seconds to clear the counter.

☐ Verify that the counter is reset to 00.

Factory Temperature Calibration

Specification

A small adjustment may be made to calibrate the probe's readings to an external measurement.

1. While Idle, hold the ⓪ key for ten seconds.

2. The display shows 🯰🯰🯰🯰 🯰🯰🯰🯰.

3. Press Cancel ⊗ to quit without changes.

4. Press Select ✔.

5. The unit flashes the current temperature.

6. Enter the new temperature.

7. Press Select ✔ to accept the new temperature, Cancel ⊗ to quit without changes.

If 25 seconds pass without the Select ✔ key being pressed, the entry is canceled and the unit returns to Idle without changes.

Test

ST-Start-Adjust-Calib
Display 🯰🯰🯰🯰 🯰🯰🯰🯰. **Cancel** ⊗ **to exit, Select** ✔ **to adjust.**

☐	Time Display:	🯰🯰🯰🯰 🯰🯰🯰🯰
☐	Temp Display:	🯰🯰🯰🯰 🯰🯰🯰🯰
☐	Count Display:	Blank
☐	Valve LED:	Off
☐	Auto Comp. LED:	Off
☐	Heat LED:	Off
☐	Heater:	Off
☐	Speaker:	Off
☐	5 Seconds Pass:	—
☐	25 Seconds Pass:	**ST-Idle**
☐	***Start*** Closed:	**ST-Cooking**
☐	***Start*** Opened:	—
☐	⓪ – ⑨ Pressed:	—
☐	✔ Pressed:	**ST-Current-Calib**
☐	⊗ Pressed:	Cancel calib, **ST-Idle**
☐	① – ⑨ Held 5 sec:	—
☐	⓪ Held 10 sec:	—
☐	✔ Held 10 sec:	—
☐	⊗ Held 10 sec:	—

ST-Current-Calib
Display current calibrated temperature. Cancel ⊗ to cancel, Select ✔ to accept, 0 − 9 to enter.

☐	Time Display:	Blank
☐	Temp Display:	Flash temp
☐	Count Display:	Blank
☐	Valve LED:	Off
☐	Auto Comp. LED:	Off
☐	Heat LED:	Off
☐	Heater:	Off
☐	Speaker:	Off
☐	5 Seconds Pass:	—
☐	25 Seconds Pass:	**ST-Idle**
☐	*Start* Closed:	**ST-Cooking**
☐	*Start* Opened:	—
☐	0 − 9 Pressed:	**ST-Enter-Calib**
☐	✔ Pressed:	Accept calib, **ST-Idle**
☐	⊗ Pressed:	Cancel calib, **ST-Idle**
☐	1 − 9 Held 5 sec:	—
☐	0 Held 10 sec:	—
☐	✔ Held 10 sec:	—
☐	⊗ Held 10 sec:	—

ST-Enter-Calib
Display temperature being entered. Cancel ⊗ to cancel edit, Select ✔ to finish edit, 0 − 9 to enter edited value.

☐	Time Display:	Blank
☐	Temp Display:	Flash temp
☐	Count Display:	Blank
☐	Valve LED:	Off
☐	Auto Comp. LED:	Off
☐	Heat LED:	Off
☐	Heater:	Off
☐	Speaker:	Off
☐	5 Seconds Pass:	—
☐	25 Seconds Pass:	**ST-Idle**
☐	*Start* Closed:	**ST-Cooking**
☐	*Start* Opened:	—
☐	0 − 9 Pressed:	Edit the value.
☐	✔ Pressed:	Accept edit, **ST-Current-Calib**
☐	⊗ Pressed:	Cancel edit, **ST-Current-Calib**
☐	1 − 9 Held 5 sec:	—
☐	0 Held 10 sec:	—
☐	✔ Held 10 sec:	—
☐	⊗ Held 10 sec:	—

☐ Verify valid adjustment range +/- 15°F.

☐ Verify both °F and °C operation.

Error Displays

Specification

On error, the heater and Heater LED turn off and the speaker sounds an alarm.

The Valve LED echos the Start input.

Cooking cycles cannot be started.

The Time display flashes a message, and the Temp display flashes a code:

⸬	11	After three minutes, less than $6°$F rise.
⸬	12	After three minutes, failed to pass $250°$F.
⸬	21	Temp change more than $100°$F in 2 seconds.
⸬	22	Ambient circuit error input.
⸬	23	Temp circuit limit error input.
⸬	31	Temp $> 415°$F.
⸬	41	Temp $> 500°$F.
⸬	42	Probe circuit: 0 freq input.
⸬	43	Probe cold: after three minutes, less than $45°$F.

⸬ tests re-initiate at power up or after preset change.

Test

☐ Each of:

☐	⸬	11	After three minutes, less than $6°$F rise.
☐	⸬	12	After three minutes, failed to pass $250°$F.
☐	⸬	21	Temp change more than $100°$Fin 2 seconds.
☐	⸬	22	Ambient circuit error input.
☐	⸬	23	Temp circuit limit error input.
☐	⸬	31	Temp $> 415°$F.
☐	⸬	41	Temp $> 500°$F.
☐	⸬	42	Probe circuit: 0 freq input.
☐	⸬	43	Probe cold: after three minutes, less than $45°$F.

☐ See error log entry for definitions of valid errors.

☐ Verify that 300Hz for -8V generation is turned off after 2 seconds.

☐ Verify that a lesser error can become a probe error IF within 2 seconds.

☐ Verify probe error (-8V gone) does NOT occur 2 seconds after a lesser error.

☐ Verify error log entries are accumulated.

☐ Heater and LED ♨ off.

☐ Speaker sounding alarm.

☐ Time display shows message.

☐ Temp display shows code.

☐ Auto comp LED ⏱🌡 blank.

☐ Valve LED 🖰 responds to *Start* switch input.

☐ All keys ⓪ – ⑨, Select ✔ and Cancel ⊗ inactive.

☐ No change after 25 seconds.

□ ⏃⏃⏃⏃ tests re-initiate at power up or after preset change.

Error Log

Specification

To view the log of up to 9 of the most recent errors:

1. Hold Select ✔ for 10 seconds.

2. The display shows ⧆⧆⧆⧆ ⧆⧆⧆⧆. Press ✔ to continue, or ⊗ to exit.

3. The display shows the error message, the count shows 01, the most recent error.

4. If no error for this entry, the display shows ⧆⧆⧆⧆ ⧆⧆⧆⧆.

5. Press ① – ⑨ to select other error log entries, 1-9.

6. Press Cancel ⊗ key to return the unit back to Idle.

7. Hold the ⓪ key for ten seconds to clear the error log, returning back to entry 01 which will now show ⧆⧆⧆⧆ ⧆⧆⧆⧆.

Test

ST-Start-Error-Log
Show ⧆⧆⧆⧆ ⧆⧆⧆⧆ . ✔ to continue, ⊗ to exit.

☐	Time Display:	⧆⧆⧆⧆ ⧆⧆⧆⧆
☐	Temp Display:	⧆⧆⧆⧆ ⧆⧆⧆⧆
☐	Count Display:	Blank
☐	Valve LED:	Off
☐	Auto Comp. LED:	Off
☐	Heat LED:	Off
☐	Heater:	Off
☐	Speaker:	Off
☐	5 Seconds Pass:	—
☐	25 Seconds Pass:	**ST-Idle**
☐	*Start* Closed:	**ST-Cooking**
☐	*Start* Opened:	—
☐	⓪ – ⑨ Pressed:	—
☐	✔ Pressed:	**ST-Error-Log**
☐	⊗ Pressed:	**ST-Idle**
☐	① – ⑨ Held 5 sec:	—
☐	⓪ Held 10 sec:	—
☐	✔ Held 10 sec:	—
☐	⊗ Held 10 sec:	—

ST-Error-Log
Show error type and code and index. $\otimes$ to exit, 1 − 9 to select index.

☐	Time Display:	Error type
☐	Temp Display:	Error code
☐	Count Display:	Index 1-9.
☐	Valve LED:	Off
☐	Auto Comp. LED:	Off
☐	Heat LED:	Off
☐	Heater:	Off
☐	Speaker:	Off
☐	5 Seconds Pass:	—
☐	25 Seconds Pass:	**ST-Idle**
☐	*Start* Closed:	**ST-Cooking**
☐	*Start* Opened:	—
☐	0 − 9 Pressed:	Select index.
☐	✔ Pressed:	—
☐	$\otimes$ Pressed:	**ST-Idle**
☐	1 − 9 Held 5 sec:	—
☐	0 Held 10 sec:	Beep, and clear error log.
☐	✔ Held 10 sec:	—
☐	$\otimes$ Held 10 sec:	—

☐ Generate several error conditions.

☐ Verify that the log remembers the conditions and responds correctly to key inputs.

☐ Verify that the log can be cleared.

ESD Noise and Power Loss Recovery

Specification

- ESD noise testing must not result in unit lock-up or loss of preset memory values.

- Power line loss and resume must not result in unit lock-up or loss of preset memory values.

- If valve is closed on power-up and if no cooking cycle was previously in progress, unit starts a new cooking cycle with full cooking time.

- If valve is closed on power-up and if a cooking cycle was previously in progress, unit alarms and the display alternates ⸿⸿⸿⸿ ⸿⸿⸿⸿ / ⸿⸿⸿⸿ ⸿⸿⸿⸿ until the valve is opened and unit returns to idle.

Test

☐ Standard ESD noise testing — Using an ESD gun on the front panel, verify unit does not lock-up or lose presets. False button-presses and momentary cycle starts are acceptable, but unit should always recover to idle with presets preserved.

☐ Standard line power loss cycle testing — Using a power on/off interval timer, verify that the unit does not lock-up or lose presets over a wide range of power loss/resume cycle on/off times.

☐ Verify that if valve is closed on power-up and if no cooking cycle was previously in progress, unit starts a new cooking cycle with full cooking time.

☐ Verify that if valve is closed on power-up and if a cooking cycle was previously in progress, unit alarms and the display alternates ⸿⸿⸿⸿ ⸿⸿⸿⸿ / ⸿⸿⸿⸿ ⸿⸿⸿⸿ until the valve is opened and unit returns to idle.