ERROR CODE TROUBLESHOOTING GUIDE

ERROR SEVERITY		
Priority	Severity	Reaction
Low	1	Error is logged and only readable through the service menu, no indication to user.
Low	2	Brief error screen upon door being opened, error logged.
Medium	3	Steady error screen upon door being opened, error logged.
Medium	4	Steady error screen upon door being opened, error logged, and chime when door is opened.
Critical	5	Steady error screen upon door being opened, error logged, and chime even when door is closed.

ERROR CODE TROUBLESHOOTING GUIDE		
Code	Severity	Description and Action
10 0 00	2	Condenser thermistor open. Verify temperature reading and ohm thermistor. Replace thermistor if bad.
10 0 01	2	Condenser thermistor shorted. Verify temperature reading and ohm thermistor. Replace thermistor if bad.
10 0 02	2	Condenser thermistor unstable. Check for bad connections and/or damaged wires. Replace thermistor if bad.
10 1 00	2	Zone 1 cabinet thermistor open. Verify temperature reading and ohm thermistor. Replace thermistor if bad.
10 1 01	2	Zone 1 cabinet thermistor shorted. Verify temperature reading and ohm thermistor. Replace thermistor if bad.
10 1 02	2	Zone 1 cabinet thermistor unstable. Check for bad connections and/or damaged wires. Repair connection or wire.
10 1 10	2	Zone 1 evaporator thermistor open. Verify temperature reading and ohm thermistor. Replace thermistor if bad.
10 1 11	2	Zone 1 evaporator thermistor shorted. Verify temperature reading and ohm thermistor. Replace thermistor if bad.
10 1 12	2	Zone 1 evaporator thermistor unstable. Check for bad connections and/or damaged wires. Repair connection or wire.
10 2 00	2	Zone 2 cabinet thermistor open. Verify temperature reading and ohm thermistor. Replace thermistor if bad.
10 2 01	2	Zone 2 cabinet thermistor shorted. Verify temperature reading and ohm thermistor. Replace thermistor if bad.
10 2 02	2	Zone 2 cabinet thermistor unstable. Check for bad connections and/or damaged wires. Repair connection or wire.
10 2 10	2	Zone 2 evaporator thermistor open. Verify temperature reading and ohm thermistor. Replace thermistor if bad.
10 2 11	2	Zone 2 evaporator thermistor shorted.

Troubleshooting

Error Code Troubleshooting Guide (continued)

ERROR CODE TROUBLESHOOTING GUIDE		
Code	Severity	Description and Action
		Verify temperature reading and ohm thermistor. Replace thermistor if bad.
10 2 12	2	Zone 2 evaporator thermistor unstable. Check for bad connections and/or damaged wires. Repair connection or wire.
10 3 00	2	Zone 3 cabinet thermistor open. Verify temperature reading and ohm thermistor. Replace thermistor if bad.
10 3 01	2	Zone 3 cabinet thermistor shorted. Verify temperature reading and ohm thermistor. Replace thermistor if bad.
10 3 02	2	Zone 3 cabinet thermistor unstable. Check for bad connections and/or damaged wires. Repair connection or wire.
10 3 10	2	Zone 3 evaporator thermistor open. Verify temperature reading and ohm thermistor. Replace thermistor if bad.
10 3 11	2	Zone 3 evaporator thermistor shorted. Verify temperature reading and ohm thermistor. Replace thermistor if bad.
10 3 12	2	Zone 3 evaporator thermistor unstable. Check for bad connections and/or damaged wires. Repair connection or wire.
10 7 00	1	Ambient thermistor on control board open. Replace control board.
15 1 00	5	Zone 1 compressor relay stuck open. No current detected. No load, open relay, inverter, or harness. Check wiring, compressor, inverter, and control board connections; possible issue with control board or inverter.
15 1 01	5	Zone 1 compressor relay stuck closed. Verify and replace control board.
15 2 00	5	Zone 2 compressor relay stuck open. No current detected. No load, open relay, inverter, or harness. Check wiring, compressor, inverter, and control board connections; possible issue with control board or inverter.
15 2 01	5	Zone 2 compressor relay stuck closed. Verify and replace control board.

ERROR CODE TROUBLESHOOTING GUIDE		
Code	Severity	Description and Action
15 3 00	5	Zone 3 compressor relay stuck open. No current detected. No load, open relay, inverter, or harness. Check wiring, compressor, inverter, and control board connections; possible issue with control board or inverter.
15 3 01	5	Zone 3 compressor relay stuck closed. Verify and replace control board.
15 4 00	2	Defrost relay stuck open. No power to defrost heater; verify and replace control board.
15 4 01	3	Defrost relay stuck closed. Verify and replace control board.
15 C 00	1	AC condenser fan relay stuck open. No power to condenser fan; verify and replace control board.
15 C 01	1	AC condenser fan relay stuck closed. Verify and replace control board.
15 U 00	1	Water valve no current detected. No current change detected for an activated call for water or dispense; possible relay stuck open or failed valve. Check valves, harnesses, and proper voltage from control board output; replace control board or valve or repair connection.
15 U 01	4	Water valve current detected. After valid dispense or ice maker fill, current is still detected for a water call. Check for shorted relay on control board; replace control board.
20 2 00	2	Defrost bi-metal stuck open. Verify the bi-metal is an open circuit below -2°C; replace defrost bi-metal if necessary.
20 2 01	2	Defrost bi-metal stuck closed. Verify the bi-metal is closed above 28°C; replace defrost bi-metal if necessary.
20 2 05	1	Defrost bi-metal miswire with normal temperatures. Normal defrost temps, but inappropriate response from bi-metal. Check wiring and bi-metal mounting; correct any issue found.

Troubleshooting

Error Code Troubleshooting Guide (continued)

ERROR CODE TROUBLESHOOTING GUIDE		
Code	**Severity**	**Description and Action**
20 2 06	2	Defrost bi-metal miswire with overheating. High temps during defrost and inappropriate response from bi-metal. Check wiring and bi-metal mounting; correct any issue found.
20 2 50	2	Defrost heater open. Check defrost heater ohms. Verify wiring and heater; replace heater if necessary.
30 8 05	1	No signal from ice maker for fill. Check wiring and power to ice maker.
35 1 00	2	Zone 1 evaporator fan open. Check control board, door/drawer switch, and evaporator fan; replace failed part.
35 1 33	1	Zone 1 fan speed faster than setting. Verify fan is not shorted; the fan is running faster than its setting. Possible control board reading error, evaporator fan error, or wiring/connector error; replace faulty part.
35 1 34	1	Zone 1 fan speed slower than setting. Check fan for obstructions, wiring issues, and actual voltage from control board; replace faulty part.
35 2 00	2	Zone 2 evaporator fan open. Check control board and evaporator fan; replace faulty part.
35 2 33	1	Zone 2 fan speed faster than setting. Verify fan not shorted; the fan is running faster than its setting. Possible control board reading error, evaporator fan error, or wiring/connector error; replace faulty part.
35 2 34	1	Zone 2 fan speed slower than setting. Check fan for obstructions, wiring issues, and actual voltage from control board; replace faulty part.
35 3 00	2	Zone 3 evaporator fan open. Check control board and evaporator fan; replace faulty part.
35 3 33	1	Zone 3 fan speed faster than setting. Verify fan not shorted; the fan is running faster than its setting. Possible control board reading error, evaporator fan error, or wiring/connector error; replace faulty part.
35 3 34	1	Zone 3 fan speed slower than setting. Check fan for obstructions, wiring issues, and actual voltage from control board; replace faulty part.
35 A 00	1	Air filter fan open. Check control board and air filter fan; replace faulty part.
35 C 00	1	DC condenser fan open. Check wiring and power to condenser fan; replace faulty part.
35 C 33	1	DC condenser fan speed faster than setting. Verify fan not shorted; the fan is running faster than its setting. Possible control board reading error, condenser fan error, or wiring/connector error; replace faulty part.
35 C 34	1	DC condenser fan speed slower than setting. Check fan for obstructions, wiring issues, and actual voltage from control board; replace faulty part.
40 1 00	1	Zone 1 stepper current fault. No current detected.
40 1 40	3	Zone 1 excessive compressor runtime. Verify performance of unit and check for door leaks, door ajar, proper charge in system, and icing of evaporator; replace faulty part.
40 1 87	1	Zone 1 stepper cooling fault. No cooling detected.
40 2 00	1	Zone 2 stepper current fault. No current detected.
40 2 40	3	Zone 2 excessive runtime. Verify performance of unit and check for door leaks, door ajar, proper charge in system, and icing of evaporator; replace faulty part.
40 2 87	1	Zone 2 stepper cooling fault.

Troubleshooting

ERROR CODE TROUBLESHOOTING GUIDE (continued)

ERROR CODE TROUBLESHOOTING GUIDE		
Code	Severity	Description and Action
		No cooling detected.
40 3 40	3	Zone 3 excessive runtime. Verify performance of unit and check for door leaks, door ajar, proper charge in system, and icing of evaporator; replace faulty part.
40 9 40	1	Dispenser max time. Dispenser active for maximum fill time. Verify no stuck keys or flooding. Reset after 30 days; allows service time to review usage or any issues that occurred.
40 b 00	1	Baffle current fault. Check harness and power from control board; repair harness or replace baffle or control board.
40 b 87	1	Baffle cooling/position fault. Check baffle operation; replace baffle or control board.
45 1 00	1	Lights open circuit. Main lights relay open, bulb open, or circuit open; repair circuit or replace bulb or control board.
45 1 01	1	Lights short circuit. Main lights relay closed, bulb or circuit damage; repair or replace damaged part.
45 2 00	1	Lights open circuit. Main lights relay open, bulb open, or circuit open; repair or replace damaged part.
45 2 01	1	Lights short circuit. Main lights relay closed, bulb or circuit damage; repair or replace damaged part.
90 5 80	1	No UIM communications. Check wiring and key performance of UIM; replace or repair failed part.
90 H 80	2	High voltage micro (CCM) no communication. Communication problems on control board; replace control board.
90 H 82	1	High voltage micro (CCM) partial communication.

ERROR CODE TROUBLESHOOTING GUIDE		
Code	Severity	Description and Action
		Intermittent communications on control board, check harnesses and connections; replace harness or control board.
90 H 83	2	High voltage micro (CCM) bad communication. Communication problems on control board; replace control board.
90 H 84	2	High voltage micro (CMM) initialization. Initialization fault. Power cycle unit and verify if code remains active; if code still active, replace control board.

UNIT TEMPERATURES AND THERMISTORS

Refrigerator Compartment Thermistor

The refrigerator compartment thermistor senses the refrigerator compartment temperature and relays it to the control board.

REFRIGERATOR COMPARTMENT THERMISTOR	
Thermistor Condition	Action
Open or shorted	▪ EE on UIM. ▪ Service wrench flashes. ▪ Fault code logged. ▪ Compressor faults to 20 minutes on and 40 minutes off.
High temperature offset reached	High speed run command sent to refrigerator or freezer evaporator fan.
UIM temperature display	Changes one degree per minute; is an average of compartment thermistor readings.
Sabbath mode	15- to 25-second delay before compressor starts.
Baffle at high offset	▪ Baffle opens. ▪ Evaporator fan runs on high.
Refrigerator compartment below 2°C	Defrost time extended before starting evaporator fan.

Refrigerator Compartment Thermistor Test

1 Turn off power to the unit.

2 Follow the procedure in Component Removal and Installation to expose the refrigerator cabinet thermistor.

REFRIGERATOR COMPARTMENT THERMISTOR TEST (continued)

3 Follow the procedure in Component Removal and Installation to expose the control board.

4 Remove the thermistor harness from the control board.

5 Place the thermistor into an ice bath of 0°C. Let the thermistor sit for five minutes, stirring occasionally.

6 Measure the resistance of the thermistor through the control board connector.

7 If thermistor is outside the normal range of 30,000 to 33,000 ohms, replace it.

Refrigerator Evaporator Thermistor

The refrigerator evaporator thermistor senses the refrigerator evaporator temperature and transmits it to the control board.

REFRIGERATOR EVAPORATOR THERMISTOR	
Thermistor Condition	**Action**
Open or shorted	▪ EE in Service Options - Temps. ▪ Service wrench icon flashes. ▪ Fault code logged.
3°C to 7°C	Compressor energized.
Evaporator temperature too low after off cycle defrost or during normal cycle	Evaporator fan runs at high speed.

Refrigerator Evaporator Thermistor Test

1 Turn off power to the unit.

2 Follow the procedure in Component Removal and Installation to expose the refrigerator evaporator thermistor.

3 Remove the thermistor from the refrigerator evaporator.

4 Follow the procedure in Component Removal and Installation to expose the control board.

5 Remove the thermistor harness from the control board.

6 Place the thermistor into an ice bath of 0°C. Let the thermistor sit for five minutes, stirring occasionally.

7 Measure the resistance of the thermistor through the control board connector.

8 If thermistor is outside the normal range of 30,000 to 33,000 ohms, replace it.

FANS

Condenser Fan Testing

The condenser fan is supplied with 12 VDC at all times. The condenser area temperature determines the speed of the fan.

TIP: Test the condenser fan under load.

1 Verify the control board model configuration is correct.

2 Disconnect the electrical connector from the fan.

3 Measure the resistance between the power wire and the return wire.

4 Reconnect the fan.

5 Check for voltage between the power and return wires.

6 Check for voltage between the variable speed control and return wires.

Condenser Fan Speed

CONDENSER FAN SPEED	
Thermistor Condition	**Fan Speed**
Approximately 13°C	Low speed
Approximately 24°C	Medium speed
Approximately 35°C	High speed
Open/shorted	High speed

Condenser Fan Wiring

CONDENSER FAN WIRING	
Wire Color	**Function**
Red	Fan power
Yellow/orange	Variable speed control
Blue/orange	Tachometer input
Black/red	Fan return

Evaporator Fan Test

The evaporator has 12 VDC power at all times. Evaporator temperature determines the fan speed.

TIP: Test the evaporator fan under load.

1 Verify the control board model configuration is correct.

2 Disconnect the electrical connector from the fan.

3 Measure the resistance between the power wire and the return wire.

4 Reconnect the fan.

5 Check for voltage between the power and return wires.

EVAPORATOR FAN TEST (continued)

6 Check for voltage between the variable speed control and return wires.

Integrated Evaporator Fan Wiring

The evaporator fan uses a four-wire system to control fan operation. The four wires are fan power, variable speed control out, tachometer input, and fan return. Measuring the DC voltage between these wires should produce the following results.

FAN DC VOLTAGE TEST RESULTS	
Test	**Measure Result**
Fan power to fan return	12 VDC
Variable speed control out to fan return	12 VDC
Tachometer input to fan return	Variable VDC based on fan speed

TIP: Test voltage under load.

EVAPORATOR FAN WIRE COLORS		
Color	**Refrigerator**	**Freezer**
Red	Power	Power
Yellow	Variable speed control	N/A
Yellow/brown	N/A	Variable speed control
Blue	Tachometer input	N/A
Blue/white	N/A	Tachometer input
Black/red	Fan return	Fan return

SEALED SYSTEM

Sealed System Troubleshooting

Enter the sealed system to check pressures only if the Error Code Troubleshooting Guide and General Troubleshooting Guide do not pinpoint the cause of the temperature problem.

- Always use solder-on process valves when entering the sealed system. Do NOT use bolt-on process valves as they are prone to leak.
- When servicing the sealed system, always replace the high side filter drier.
- System pressures are listed in the Technical Data section of the service manual.
- Pressures listed are for reference only; actual pressure readings may vary because of ambient temperatures, temperature setpoints, food load, food temperature, condenser cleanliness, or gauge calibration.

Non-Functional, Inefficient, or Noisy Compressor

1 Always evacuate R600a refrigerant to the outdoors.

2 Use nitrogen for back-flushing the system.

3 Replace the compressor.

4 Replace the high-side filter drier.

5 Recharge the system with virgin R600a refrigerant.

High Side Leak

1 Always evacuate R600a refrigerant to the outdoors.

2 Use nitrogen for back-flushing the system.

3 Repair any leaks at the solder joint or replace the defective component.

4 Replace the high-side filter drier.

5 Bump or tap the compressor to help release residual refrigerant from the oil in the compressor.

6 Recharge the system with virgin R600a refrigerant.

Low Side Leak

1 Always evacuate R600a refrigerant to the outdoors.

2 Use nitrogen for back-flushing the system.

3 Repair any leaks at the solder joint or replace the defective component.

4 If all refrigerant escapes and the system is in a vacuum, replace the compressor.

5 Replace the high-side filter drier.

6 Recharge the system with virgin R600a refrigerant.

Contaminated Sealed System

1 Always evacuate R600a refrigerant to the outdoors.

2 Use nitrogen for back-flushing the system.

3 Repair any leaks at the solder joint, or replace the defective component.

4 Replace the compressor.

5 Replace the high-side filter drier.

6 Replace the evaporator or heat exchanger assembly if the cap tube clogs.

7 Install a low-side drier on the suction line.

8 Recharge the system with virgin R600a refrigerant.

Sealed System Restriction

IMPORTANT NOTE: If a restriction is due to the sealed system being contaminated, see Contaminated Sealed System.

1. Always evacuate R600a refrigerant to the outdoors.
2. Locate and remove the restriction or locate and replace the part.
3. Use nitrogen for back-flushing the system.
4. Replace the high-side filter drier.
5. Bump or tap the compressor to help release residual refrigerant from the oil in the compressor.
6. Recharge the system with virgin R600a refrigerant.

Sealed System Refrigerant Overcharge

1. Always evacuate R600a refrigerant to the outdoors.
2. Use nitrogen for back-flushing the system.
3. Replace the high-side filter drier.
4. Bump or tap the compressor to help release residual refrigerant from the oil in the compressor.
5. Recharge the system with virgin R600a refrigerant.