9.3 Fault finding

Hardware control components

Operations communication:

1. The oven has 2 main parts being the QTS assembly (Keyboard, Screen, Logic) and the SRB (Smart Relay Board to switch and monitor the required operation).
2. The QTS is the master of the oven and instructs the SRB what to do, in turn the SRB communicates information on the operation back to the QTS.
3. The QTS and SRB have their own Personality Module (PM) fitted with the respective software to be able to communicate and work with each other.
4. The power provision to the QTS and the communication between QTS and SRB is enabled via ONE cable with RJ45 connectors fitted.

Start up sequence

With the oven switch in the OFF position and the mains power ON, the QTS & SRB boards boot up.

When the oven switch is turned ON the splash screen briefly displays oven information and the cabinet cooling fan is activated.

After completing a successful logic test, the safety relay is energised and the oven preheats or displays a preheat temperature choice. Once preheated the oven displays the main menu if in "Full Service Mode" or a recipe selection if in "Quick Service Mode".

Shutting down sequence

When oven switch is turned OFF the screen displays ‘Shutting Down’ and the cooling fan operates until the cabinet temperature has been sufficiently reduced (cavity temperature of 50°C / 122°F).

The safety relay is de-energised and the QTS & SRB boards remain active.

Exchanging data via USB interface

Procedures of exchanging data by using the USB memory stick:

- Menu loading from the USB memory stick to the appliance (recipes / download)
- Software loading from the USB memory stick to the appliance (firmware / download)
- Error log saving from the appliance to the USB memory stick (upload)
- Menu copying from the appliance to the USB memory stick (upload)
- Recipe counter copying from the appliance to the USB memory stick (upload)

Error Code List

Error Code	Error Condition	Description	Trigger	Possible Causes	System Response
E 101	Magnetron failed to energise	Detects a magnetron is not working correctly	The current measured by the current sensing transformer was outside of tolerance.	Failure of component/s in the microwave circuit	Display error message until system is power cycled.
E 102	Heater incorrect current	Detects a heating element is not working correctly	The current measured by the sensing transformer on the SRB was <1A when heating cycled on or >1A when heating cycled off.	If some current >1A, one or more heater elements could have failed. If current measured <1A possible wiring fault stopping power reaching element.	Display error message until system is power cycled.
E 103	Ambient overheat >70°C	Detects if the controls area is operating above temperature	The ambient temperature measured on the QTS and SRB was >70°C	Cooling fan failed. Cooling fan wired incorrectly. Inlet air too hot. Blocked inlet filter.	Display error message until ambient controls area temperature is below 60°C.
E 104	Magnetron / cavity overheat	Detects if the cavity and magnetrons are above temperature	Cavity and magnetron overheat thermostats	Cooling fan failed. E103 / E106 not triggering. Failed SRB. Magnetron failure. Wiring / connection fault. Blocked inlet filter.	Display error message until service call and the magnetron cools down or the cavity stat is reset.
E 105	Supply frequency high / low	Detects if the power supply frequency is outside specification	The power supply to the oven frequency sensor on the SRB measures too high / low	Incorrect mains voltage. Poor internal / external wiring connections. Faulty SRB.	Display error message until system power cycled.
E 106	Cavity reaches 25°C above setpoint once it has been controlling at setpoint	Detects if the cavity temperature has risen above imits	The setpoint of the appliance was exceeded	Cavity fire. Failed convection fan. No impeller or loose impeller on convection fan.	Display error message until system is power cycled.
E 107	Communication error	No communication can be made between the QTS and SRB	Loss of communication between the SRB and QTS	SRB / QTS connection cable unplugged or damaged. Faulty QTS or SRB.	Display error message until system is power cycled.

E 108	QTS PM error	Wrong PM found / no PM found	The QTS or SRB either has an incorrect PM (Personality Module) fitted or no PM is fitted	The PM has been changed and is incorrect. The PM has been removed.	Display error message until system is power cycled.
E 109	SRB PM error				
E 110	SRB version conflict	SRB firmware version incompatible with QTS version	The QTS has found that the firmware running the SRB is not supported.	Firmware update has been carried out to the QTS and the SRB has not been updated to match.	Display error message until system is power cycled.
E 111	Cavity sensor error	Cavity sensor broken / unplugged	The controller is reading an open circuit across the thermocouple input	The thermocouple is not connected. The thermocouple is broken open circuit. Failed SRB.	Display error message until system is power cycled.
E 112	SRB sensor fail	SRB ambient temperature sensor failure	Shorted SRB temperature sensor	Shorted Ambient temp sensor on the SRB	Display error message until service call and the magnetron cools down or the cavity stat
E 113	Magnetron fail on without request	Magnetron operates without being requested to do so.	Magnetron current sensed at >1 Amp	Triac, Diode or relay short circuited on SRB	Display error message until service call and the magnetron cools down or the cavity stat is reset.
E 116	Heater off on request	No heater current detected when requested	Cavity does not reach 100°C in 30 minutes	Oven heater element failure	Display error message until service call and the magnetron cools down or the cavity thermostat is reset.
E 117	Magnetron overheat thermostat	Magnetron overheat thermostat has been triggered as a result of excessive temperature	Magnetron stat is open circuit when running microwave	Blocked air filters / high environmental temperatures / Positioning next to heat sources or failed magnetron	Display error message until service call and the magnetron cools down or the cavity thermostat is reset.
n/a	Oven door open longer than 1 min.	Oven door open. Oven inoperable.	Break in switched feed on SRB	Door left open. Failed door switch/s or SRB. Faulty wiring or connection.	Display warning message until door is closed.
n/a	Air filter removed	Air filter not fitted. Oven inoperable.	Filter not fitted.	Failed reed switch/s or SRB. Faulty wiring or connection.	Display error message until filter replaced.

n/a	Screen frozen	Touch screen inoperable	Continual pressure of the touch screen	Damaged touch screen / touch screen depress for more than 15 seconds.	Display error message until touch screen press released

Error code for recommission test messages

89 Cooling test fail
90 Convection test fail
92 Heater test fail
93 Magnetron test fail
94 Air filter in test fail
95 Air filter out test fail
96 Door closed test fail
97 Door open test fail
98 Incomplete cleaning

Normal error messages

86 On/Off switch operated
99 Air filter override accepted by the customer
100 Main power On, oven connected to the supply door open (for more than 1 minute)
If 'Door Open' message is shown while the door is closed, check the Magnetron 230V circuit power supply.

Error messages (the oven stops operating)

88 Supply voltage error (+/- 10% of rated voltage)
101 Magnetron failed on request
102 Heater ON without request
103 Ambient overheat
104 Magnetron/cavity overheat trip, when oven in idle mode (also see E117)
105 Supply frequency error (+/- 2Hz)
106 Cavity reaches 75°C above set point or 25°C at 275°C
107 Communication error QTS-SRB
108 QTS Personality Module error
109 SRB Personality Module error
110 Incompatible SRB version
111 Cavity sensor failed
112 SRB board sensor failed
113 Magnetron on without request
114 Free – currently not used
115 Convection fan feedback (motor speed controller cable disconnected)
116 Heater OFF on request
117 Magnetron/cavity trip during cook operation cycle (OH-12V gone for > 1sec)
If this OH trip happens in idle mode you get E104.

To reset the error, disconnect the oven from the power supply and re-connect.