

7

Troubleshooting

Major faults with this chamber are detected through equipment self-checks. The details of the fault are displayed and a buzzer sounded to notify the user. This function is referred to as an alarm. This chapter explains the causes and remedial action of alarms and other faults.

Contact the place of purchase or ESPEC CORP. in the following cases.

- When the equipment fails operate normally after taking the prescribed remedial action.
- Where “Call service.” is indicated in this chapter.

7.1 Alarm and Action

When an alarm has been generated, take the following action.

- ① Check the alarm code indicated on the display.



- ② Take the remedial action prescribed for the alarm code in the Alarm code list.
- ③ Reset the alarm. Press the **POWER** key on the controller.
- ④ To reactivate the chamber, press the **POWER** key again.

- For alarms AL-1 and 1-9, steps ③ and ④ are unnecessary. The chamber will reset automatically just by clearing the alarm state. However, the display will remain unchanged after alarm AL-9, therefore press the **POWER** key to clear the display.

Table 7.1 Alarm code list

Alarm code	Location	Symptom	Probable cause	Remedial action
AL00	Burn out	Temperature sensor fault	Temperature sensor disconnection	Reconnect the temperature sensor.
AL01	Automatic temperature overheat	Temperature inside the chamber rose 10°C above the set temperature.	Specimens generated excessive heat.	Reduce specimen heat generation.
			Insufficient ventilation.	Open the damper.
			Temperature setting is too low.	Set temperature (ambient temperature + 20) °C
AL02	Upper temperature limit alarm	Temperature inside the chamber rose above the upper temperature limit alarm setting.	Upper temperature limit alarm setting is too low.	Change the upper temperature limit alarm setting.
			Specimens generated excessive heat.	Reduce specimen heat generation.
AL03	Lower temperature limit alarm	Temperature inside the chamber dropped below the lower temperature limit alarm setting.	Lower temperature limit alarm setting is too high.	Change the lower temperature limit alarm setting.
			Excessive ventilation.	Close the damper.
AL06	Overheat protector	The overheat protector tripped.	Overheat protector setting is too low.	Raise the overheat protector setting.
		(All digits of setting device display are flashing.)	Specimens generated excessive heat.	Reduce specimen heat generation.
		Trouble in the overheat protector temperature sensor ("---" burnout indication appears on setting device display.)	Faulty contact in overheat protector temperature sensor.	Reconnect the temperature sensor.
	Circuit protector	The circuit protector tripped.	Short circuit or overcurrent of the heating circuit.	Call service.
	Thermal fuse.	The thermal fuse blew.	Heater system fault	Call service.
AL07	Air circulator temperature switch (except for PH(H)-401)	The air circulator temperature switch tripped.	The air circulator shaft locked.	Call service.
	Air circulator overload relay (PH(H)-401 only)	Air circulator overload relay tripped.		
AL09	Door switch (Only for PH(H)-401)	The chamber door was open for 3 minutes or longer.	The chamber door is open.	Close the door.
AL82	Time setting	The program is set to run at "0:00".	Inappropriate time setting.	Remake the setting.
	Temperature setting	The program (step) temperature setting exceeds the upper (lower) temperature limit alarm.	Inappropriate temperature setting.	Remake the setting.
E1	Memory error	Internal memory error	Internal memory error noise	Call service. supply environment
E2	Memory error	External memory error	External memory error	Call service.
2	CPU error	CPU malfunction	Malfunction caused by noise	Improve the power supply environment

7.2 Before You Call for Service

The below table includes faults not detected by self-checks and operational mistakes that are easily mistaken as faults.

Note, also, that the fault symptoms listed in the below table can occur when the chamber is equipped with certain options even though there is nothing wrong with the equipment. For more information, contact the place of purchase or ESPEC CORP.

Table 7.2 Before you call for service

Symptom	Probable cause	Remedial action	Reference
The display does not light up even when the POWER key is pressed.	The primary power is OFF.	Turn ON the primary power.	—
	The main power switch is OFF.	Turn ON the main power switch.	4.6
	Incorrect phase. (PH(H)-401 only)	Connect the power cord correctly.	—
	The fuse is blown.	Replace the fuse.	7.3
The temperature setting cannot be changed.	The keys are locked.	Unlock the keys.	2.3
Too much time is required to pull up/down temperature	Heat load of specimens is large.	Reduce the number of specimens.	4.3
	Ambient temperature is too low/high.	Raise/lower the ambient temperature.	—
	The damper is open/closed.	Close/open the damper.	5.1
Temperature uniformity is uneven.	Air circulation inside the chamber is poor.	Improve air circulation.	4.3
	Specimens are generating too much heat.	Reduce specimen heat generation.	—
	Excessive ventilation.	Reduce damper aperture.	—
Temperature is unstable.	Excessive ventilation.	Reduce damper aperture.	—
	Ambient temperature changes more than 5°C per one hour.	Stabilize ambient temperature, then restart operation.	—
	Power supply to high heat-generating specimens is turning ON and OFF.	Reduce specimen heat generation.	—

Symptom	Probable cause	Remedial action	Reference
Temperature gradually rises above the set temperature.	Specimens are generating too much heat.	Reduce specimen heat generation.	—
Strange odors or smoke is producing from the chamber.	Immediately after installation, the shelf brackets and shelves may burn, producing a strange odor and smoke.	No trouble has occurred with the chamber. Operate the chamber as is.	—
The air circulator and heater do not work. (Only for PH(H)-401)	The door switch tripped.	Press on the door until tightly closed and locked.	2.1

7.3 Replacing the fuse

When the fuse blows, replace it by observing the following procedure.

The customer must keep a supply of spare fuses.

- ① Turn OFF the main power switch.
- ② Open the electrical compartment door.
- ③ Take out the fuse and check if it has blown or not.
- ④ Replace the fuse with a spare, if blown.

• If the fuse blows immediately after being replaced, contact the place of purchase or ESPEC CORP.