

# 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 Faults indicated by alarm

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

- ① Check the alarm code indicated on the display.



AL06

- 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 AL-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
<b>AL00</b>	Burn out	Temperature sensor fault	Temperature sensor disconnection	Reconnect the temperature sensor.
<b>AL01</b>	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
<b>AL02</b>	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.
<b>AL03</b>	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.
<b>AL06</b>	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.
<b>AL07</b>	Air circulator temperature switch (except for SPH(H)-401)	The air circulator temperature switch tripped.	The air circulator shaft locked.	Call service.
	Air circulator overload relay (SPH(H)-401 only)	Air circulator overload relay tripped.		
<b>AL09</b>	Door lock switch	The door remained unlocked for more than 3 minutes.	The door is not properly locked.	Lock the door properly.
<b>AL82</b>	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.
<b>E1</b>	Memory error	Internal memory error	Internal memory error	Call service.
<b>E2</b>	Memory error	External memory error	External memory error	Call service.
<b>2</b>	CPU error	CPU malfunction	Malfunction caused by noise	Improve the power supply environment