

# Chapter 8

## Troubleshooting

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This chapter explains equipment trouble and how to remedy it. When trouble is detected by one of the self-check features, the trouble is displayed on the instrumentation panel display and a trouble buzzer is sounded. For trouble undetected in self-checks and misoperation which can be easily mistaken as trouble, see "8.2 Before You Call for Service".

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## 8.1 Alarm and Action

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 **DANGER**

- **ELECTRIC SHOCK! Before working on the power circuits on the primary side of the main power switch (leakage breaker), shut OFF primary power supply and check the line is dead. Also, take measures to prevent accidental charging.**

Working with primary power supply ON runs the risk of electric shock.

- **Shut OFF power from the main power switch (leakage breaker) BEFORE detaching the electric parts compartment door or the water circuit (heat exhaust) compartment door.**

The Platinous K Series is equipped with a buzzer that sounds when trouble occurs as well as self-check features which display the trouble on the instrumentation panel display. Displayed alarm codes and their content are given in the alarm table on the following pages. Remedy trouble as described therein.

For trouble which is undetected in self-checks, see "8.2 Before You Call for Service". If the trouble cannot be remedied after taking the prescribed action, contact the place of purchase or ESPEC CORP.

### When an Alarm Occurs

The chamber will be in one of the below states when an alarm occurs. The alarm is cleared in a different way depending on what your needs are at that time. Procedures for clearing the alarm in each of these cases are given on the following pages.

- Running in the constant mode
- Running in the program mode but not needing to continue after clearing the alarm
- Running in the program mode and needing to continue after clearing the alarm

■ **When running in the constant mode or when running in the program mode but not needing to continue after clearing the alarm**

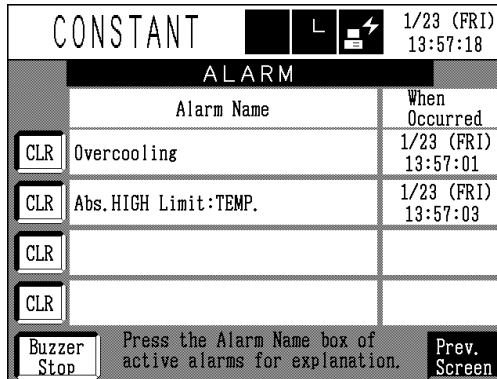
- Procedure**
1. Press the **Buzzer Stop** button on the Alarm screen to silence the buzzer.

CONSTANT		L	1/23 (FRI) 13:57:18
ALARM			
	Alarm Name	When Occurred	
CLR	Overcooling	1/23 (FRI) 13:57:01	
CLR	Abs.HIGH Limit:TEMP.	1/23 (FRI) 13:57:03	
CLR			
CLR			
Buzzer Stop	Press the Alarm Name box of active alarms for explanation.		Prev. Screen

2. If the chamber is running, press either the **OPER./STOP** key on the operating panel or the chamber operating status box on the screen to get the Operation Mode Selection screen. Then, press the **STOP** button under Stop Operation.
3. Press the **POWER** key to deactivate control power.
4. Set the main power switch in the OFF position.
5. Remedy the trouble for the alarm displayed on the Alarm screen as explained in the alarm table.
6. Set the main power switch in the ON position and then activate control power.  
The display will come on and the main menu will appear shortly.

**■ When running in the program mode and needing to continue after clearing the alarm**

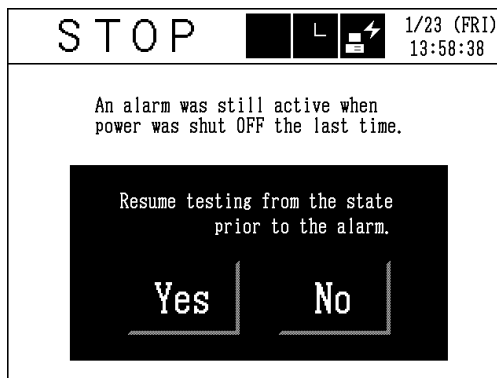
- Procedure**
1. Press the  button on the Alarm screen to silence the buzzer.



2. Press the  key to deactivate control power. Check the alarm table. If there is no need to shut OFF primary power supply, leave the main power switch in the ON position.
3. Remedy the trouble for the alarm displayed on the Alarm screen as explained in the alarm table.
4. Reactivate control power.
5. If main power switch was left in the ON position, a message confirming whether to resume testing from the state prior to the alarm or not will appear on the screen. If the main power switch was set in the OFF position, set it in the ON position and then activate control power to start the chamber.

button : Resumes testing from the state prior to the alarm.

button : Leaves the chamber stopped.



## Alarm Table

Table 8.1 Alarm table

Displayed alarm code/channel code (option)	Trouble	Cause	Remedial action
BURN-OUT AI-CH0 {0}	The room temperature compensation input to the temperature controller was disconnected. The chamber has been stopped.	The sensor is loosely connected to the RTD terminal on the SCP-220 temperature controller board or there is an open circuit on the SCP-220 board.	Turn control power OFF from the <b>POWER</b> key and resume testing. If the same alarm occurs again, call for service.
BURN-OUT AI-CH1 {0}	The dry-bulb input to the temperature controller was disconnected. The chamber has been stopped.	The sensor is loosely connected to the TD terminal on the SCP-220 temperature controller board or there is an open circuit in the connected thermocouple.	Turn control power OFF from the <b>POWER</b> key and resume testing. If the same alarm occurs again, call for service.
BURN-OUT AI-CH2 {0}	The wet-bulb/humidity input to the temperature controller was disconnected. The chamber has been stopped.	The sensor is loosely connected to the TW terminal on the SCP-220 temperature controller board or there is an open circuit in the connected thermocouple.	Turn control power OFF from the <b>POWER</b> key and resume testing. If the same alarm occurs again, call for service.
BURN-OUT AI-CH4 {0}	The wiring between SCP-220 controller and Humi. sensor unit was disconnected. The chamber has been stopped.	The wiring is loosely connected to the Humi. sensor terminal on the SCP-220 controller board or there is a failure of the Humi. sensor unit.	Turn system control OFF and ON from the <b>POWER</b> key and resume testing. If the same alarm occurs again, call for service.
HUMI.SENSOR FAILURE - 1 {0}	SCP-220 controller detected a failure of the Humi. sensor unit. The chamber has been stopped.	The solid state sensor (Humidity measurement) of Humi. sensor unit was dropped off or the sensor failed.	Check the detector of Humi. sensor which is located in test area. If the same alarm occurs again, call for service.
HUMI.SENSOR FAILURE - 2 {0}	SCP-220 controller detected a failure of the Humi. sensor unit. The chamber has been stopped.	The solid state sensor (Temperature measurement) of Humi. sensor unit was dropped off or the sensor has a failure.	Check the detector of Humi. sensor which is located in test area. If the same alarm occurs again, call for service.
HUMI.SENSOR FAILURE - 3 {0}	SCP-220 controller detected a failure of the Humi. sensor unit. The chamber has been stopped.	Power supply circuit for Humi. sensor unit has a failure.	Check the voltage of power supply circuit for Humi. sensor. If the same alarm occurs again, call for service.

Cont.

Displayed alarm code/channel code (option)	Trouble	Cause	Remedial action
BURN-OUT AI-CH5-CH12 〔0〕	A refrigeration circuit monitor channel (Ai5 to 12ch) to the temperature controller was disconnected. The chamber has been stopped. If the backup mode is ON and the chamber has multiple refrigerators, only the affected refrigerator stops while all others continue running.	Either the sensor is loosely connected to the Ai5 to 12 terminal on the SCP-220 temperature controller board or there is an open circuit in the connected thermocouple.	Turn control power OFF from the <b>POWER</b> key (wait for the test end if backup mode is ON) and resume testing. If the same alarm occurs again, call for service.
UPPER DEV. LIMIT : TEMP. 〔1〕	The temperature inside the chamber has risen above the upper deviation limit. The heater has been stopped until temperature returns within range.	Either specimens inside the chamber are generating heat or the upper deviation limit is set too low.	Remove the heat-generating specimens and/or set the upper deviation limit about 10°C. When temperature returns within range, normal control is restored automatically. The alarm can be cleared by pressing the <b>Buzzer Stop</b> key.
ABS.HIGH LIMIT : TEMP. 〔2〕	The temperature inside the chamber has risen above the absolute high limit. The chamber has been stopped.	Either specimens inside the chamber are generating heat or the absolute high limit is set too low.	Turn control power OFF from the <b>POWER</b> key. Then, remove the heat-generating specimens and/or set the absolute high limit about 15°C higher than the target temperature. Resume testing. If the same alarm occurs again, call for service.
ABS.LOW LIMIT : TEMP. 〔3〕	The temperature inside the chamber has dropped below the absolute low limit. The chamber has been stopped.	Possible causes include infiltrating of outside air, excessive cooling, the effects of cooling sources inside the chamber, and the absolute low limit being set too high.	Turn control power OFF from the <b>POWER</b> key and check the chamber door and cable ports. If the refrigerator is on manual control, correct the capacity setting. If cooling sources are overcooling the chamber, reduce their number. Also, correct the absolute low limit setting as necessary. Then, resume testing. If the same alarm occurs again, call for service.
OVERHEATING 〔6〕	The temperature inside the chamber has risen above the overheat protector setting (instrumentation panel). The chamber has been stopped. (All digits of setting device display are flashing.)	Either specimens inside the chamber are generating heat or the overheat protector is set too low.	Turn control power OFF from the <b>POWER</b> key. Then, remove the heat-generating specimens and/or correct the overheat protector setting. Resume testing. If the same alarm occurs again, it is possible the thermal fuse has blown. Call for service.
	Trouble in the overheat protector temperature sensor ("---" burnout indication appears on setting device display.)	The sensor is loosely connected to the overheat protector or there is an open circuit in the connected thermocouple.	Turn control power OFF from the <b>POWER</b> key and resume testing. If the same alarm occurs again, call for service.

Cont.

Displayed alarm code/channel code (option)	Trouble	Cause	Remedial action
BLOWER FAILURE [7]	The built-in temperature switch of the air circulator motor (water circuit [heat exhaust] compartment) tripped because the motor is abnormally hot. The chamber has been stopped.	Overloaded air circulator motor	Leave the chamber OFF until the air circulator cools down. Then, turn control power ON from the <b>POWER</b> key and resume testing.
REFRIG. : HIGH PRESSURE FAILURE [8]	The high pressure switch tripped because refrigerator pressure was high. The chamber has been stopped.	The refrigerator's operating pressure is higher than specified.	Turn control power OFF from the <b>POWER</b> key. With air-cooled refrigerators, check if the condenser filter is clogged. With water-cooled refrigerators, check cooling water temperature and flow rate. Correct as necessary and resume testing. If the same alarm occurs again, call for service.
REFRIG. : OVERCURRENT FAILURE [8]	The thermal relay tripped because refrigerator operating current was high. The chamber has been stopped.	The refrigerator's operating current is higher than specified.	Turn control power OFF from the <b>POWER</b> key. With air-cooled refrigerators, check if the condenser filter is clogged. With water-cooled refrigerators, check cooling water temperature and flow rate. Correct as necessary and resume testing. If the same alarm occurs again, call for service.
REFRIG. : SURFACE TEMP. HIGH [8]	The compressor temperature switch tripped because refrigerator surface temperature was high. The chamber has been stopped.	The refrigerator's surface temperature is higher than specified.	Turn control power OFF from the <b>POWER</b> key. With air-cooled refrigerators, check if the condenser filter is clogged. With water-cooled refrigerators, check cooling water temperature and flow rate. Correct as necessary and resume testing. If the same alarm occurs again, call for service.
REFRIG. : CONDENSER FAN FAILURE [8]	The thermal relay of the condenser fan tripped because fan operating current was high. The chamber has been stopped.	The condenser fan motor operating current is higher than specified.	Turn control power OFF from the <b>POWER</b> key and check if the condenser filter is clogged. Correct as necessary and resume testing. If the same alarm occurs again, call for service.
REFRIG. : COOLING WATER FAILURE [8]	The water suspension relay tripped because condenser (refrigerator) cooling water pressure is low. The chamber has been stopped.	Possible causes include the cooling tower (cooling water pump) being OFF, a closed water supply valve, a clogged strainer and a water leak in the cooling water circuit.	Turn control power OFF from the <b>POWER</b> key. First, check that the cooling tower is running and that water supply valves are sufficiently open. Then, check the strainer for clogs and the water circuit for leaks. Correct as necessary and resume testing. If the same alarm occurs again, call for service.
FROST ON EVAPORATOR [8]	A prolonged drop in evaporator heat exchange rate was detected during chamber operation.	The test area may not be adequately sealed because of an open cable port etc.	Turn control power OFF from the <b>POWER</b> key. Then, defrost the chamber and subsequently resume testing.

Cont.

Displayed alarm code/channel code (option)	Trouble	Cause	Remedial action
OUT-OF-RANGE* (AI-CH5 to CH12) [8]	A temperature outside of the specified range was detected on one of the temperature controller channels (Ai5 to 12ch) that monitor the refrigeration circuit. The chamber has been stopped. If the chamber has more than 1 refrigerator and the backup mode is ON, only the affected refrigerator will shut down, while the chamber will continue running using another refrigerator.	Frost buildup, compressor trouble or a refrigerant leak are all possible causes.	After testing ends, turn control power OFF and ON from the <b>POWER</b> key and resume testing. If the same alarm occurs again, call for service.
HEATER FAILURE [11]	The heater's circuit protector tripped because operating current was high. The chamber has been stopped.	Short-circuit or overcurrent in the heater circuit	Set the main power switch (leakage breaker) in the OFF position and reset the heater's circuit protector on the electric parts chassis (electric parts compartment). Then, reactivate the system from the main power switch followed by the <b>POWER</b> key, and resume testing. If the same alarm occurs again, call for service.
POWER PHASE FAILURE [19]	A reverse or open phase was detected in the 3 $\phi$ primary power supply connection. The chamber has been stopped.	Primary power supply is not correctly connected to the chamber.	An incorrect power supply can seriously affect chamber components. Set the main power switch (leakage breaker) in the OFF position, and check/correct primary power supply phase alignment and connections. Then, reactivate the system from the main power switch followed by the <b>POWER</b> key, and resume testing. If the same alarm occurs again, call for service.
EXT. EQUIPMENT FAILURE [19]	Trouble was detected in an external unit. The chamber has been stopped.	For information on external unit troubles, see the instruction manual that came with the external unit.	Turn control power OFF from the <b>POWER</b> key. Then, take the remedial action described in the instruction manual of the external unit. Resume testing. If the same alarm occurs again, call for service.

\* Alarms may be caused by issues other than that indicated by the instrumentation. For details, see Chapter 5 in the User's Manual – Reference –.

Cont.



Displayed alarm code/channel code (option)	Trouble	Cause	Remedial action
HUMIDIFIER FAILURE [21]	The humidifier's circuit protector tripped because operating current was high. The chamber has been stopped. If the backup mode is ON, humidity tests are suspended, but temperature tests continue.	Short-circuit or overcurrent in the humidifier circuit.	Set the main power switch (leakage breaker) in the OFF position and reset the humidifier's circuit protector on the electric parts chassis (electric parts compartment). Then, reactivate the system from the main power switch followed by the <b>POWER</b> key, and resume testing. If the same alarm occurs again, call for service.
	The humidifier's boil-dry protector tripped because of high surface temperature. The chamber has been stopped. If the backup mode is ON, humidity tests are suspended, but temperature tests continue.	Humidifier surface temperature rose above the limit.	Turn control power OFF from the <b>POWER</b> key. Then, check and regulate water level in the wick pan water regulator. Keep the chamber OFF until the humidifier cools down, then resume testing. If the same alarm occurs again, call for service.
ABS. HIGH LIMIT : HUM. [22]	The humidity inside the chamber has risen above the absolute high limit. The humidifier has been stopped until humidity returns within range.	The absolute high limit is set too low.	Set the absolute high limit setting about 10%rh higher than the humidity SV. When humidity returns within range, normal control is restored automatically. The alarm can be cleared by pressing the <b>Buzzer Stop</b> key.
ABS. LOW LIMIT : HUM. [23]	The humidity inside the chamber has dropped below the absolute low limit. The heater has been stopped and refrigerator capacity decreased to the minimum (turned OFF in some cases) until humidity returns within range.	The absolute low limit is set too high.	Set the absolute low limit setting about 10%rh lower than the humidity SV. When humidity returns within range, normal control is restored automatically. The alarm can be cleared by pressing the <b>Buzzer Stop</b> key.
HUM. TRAY DRAIN FAILURE [26]	Humidifying tray water level does not lower even though water is being drained. The chamber has been stopped.	Either the drainage pump has malfunctioned or the drainage line is clogged.	Check the water circuit drainage pump (water circuit compartment) is functioning correctly, and check for clogs in the drainage line and clean as necessary. Then, resume testing. If the same alarm occurs again, call for service.
MAIN WATER TANK EMPTY [26]	The main water tank is empty. The humidifier has been stopped.	The main water tank is empty.	Refill the auxiliary water tank and set it on the main water tank. Then, resume testing. After water has been sufficiently supplied to the main water tank, the alarm can be cleared by pressing the <b>Buzzer Stop</b> key. If the same alarm occurs again, call for service.
HUMIDIFIER WATER SUPPLY RATE1 [26]	The humidifying tray did not fill within the specified amount time at the start of humidity testing. The chamber has been stopped. If the backup mode is ON, humidity tests are suspended, but temperature tests continue.	The strainer on the humidifying water supply circuit is either clogged or the circuit is leaking, or water supply pressure is too low.	Check the humidifying water supply circuit (wait for the test end if the backup mode is on) and correct as necessary. Then, resume testing. If the same alarm occurs again, call for service.

Cont.

Displayed alarm code/channel code (option)	Trouble	Cause	Remedial action
HUMIDIFIER WATER SUPPLY RATE2 [26]	The humidifying tray did not fill within the specified amount time during humidity testing. The chamber has been stopped. If the backup mode is ON, humidity tests are suspended, but temperature tests continue.	The strainer on the humidifying water supply circuit is either clogged or the circuit is leaking, or water supply pressure is too low.	Check the humidifying water supply circuit (wait for the test end if the backup mode is on) and correct as necessary. Then, resume testing. If the same alarm occurs again, call for service.
DRY WICK [26]	During humidity testing, the wet-bulb (measures relative humidity) rose above the specified temperature. The humidifier will continue as is, but humidity control might destabilize and trigger a humidity alarm.	The wet-bulb wick (gauze) inside the chamber may be dry.	Stop the chamber and replace the wick. After wet-bulb temperature returns within the specified range, the alarm can be cleared by pressing the <b>Buzzer Stop</b> key.
AUX. WATER TANK EMPTY [26]	The auxiliary water tank is empty. The humidifier will continue on the water in the main tank, but it will eventually stop unless water is replenished.	The auxiliary water tank is empty.	Refill the auxiliary water tank and resume testing. After water has been sufficiently supplied to the main water tank, the alarm can be cleared by pressing the <b>Buzzer Stop</b> key. If the same alarm occurs again, call for service.
COMMUNICATION ERROR-1 [99]	The instrumentation detected communication trouble between the CPU board and display board. The chamber has been stopped.	Communication error between the CPU board and display board	Reactivate the system from the main power switch (leakage breaker) and resume testing. If the same alarm occurs again, call for service.
COMMUNICATION ERROR-2 [99]	The instrumentation detected system trouble in the display board. The chamber has been stopped.	Display board error (i.e.: internal memory, etc.)	Reactivate the system from the main power switch (leakage breaker) and resume testing. If the same alarm occurs again, call for service.
COMMUNICATION ERROR-4 [99]	The instrumentation detected system trouble in the CPU board. The chamber has been stopped.	Sequence task error on CPU board	Reactivate the system from the main power switch (leakage breaker) and resume testing. If the same alarm occurs again, call for service.
COMMUNICATION ERROR-5 [99]	The instrumentation detected system trouble in the CPU board. The chamber has been stopped.	Refrigeration task error on CPU board	Reactivate the system from the main power switch (leakage breaker) and resume testing. If the same alarm occurs again, call for service.
COMMUNICATION ERROR-6 [99]	The instrumentation detected system trouble in the CPU board. The chamber has been stopped.	Temperature control task error on CPU board	Reactivate the system from the main power switch (leakage breaker) and resume testing. If the same alarm occurs again, call for service.

Cont.

Displayed alarm code/channel code (option)	Trouble	Cause	Remedial action
CHAMBER DOOR OPEN [9]	The chamber door was detected in the open position while testing was in progress. If pause control was ON, the chamber shuts down temporarily at the same time the alarm is displayed. If pause control was OFF, testing continues, but normal operation is destabilized because the door is open and another alarm might be triggered as a result.	The door was opened or was not shut properly.	Testing can be resumed when the chamber door is properly shut. When testing is resumed, the alarm can be cleared by pressing the <b>Buzzer Stop</b> key.
PGM SP OUT-OF-RANGE  [31]	The temperature (and humidity) setting value(s) in the operating data was detected outside of the allowable operating ranges. The program has been stopped.	Temperature (and humidity) setting value(s) in the operating data is outside of the allowable operating ranges.	Recheck the operating data. The alarm can be cleared by pressing the <b>CLR</b> button on the ALARM screen. Resume testing. If the same alarm occurs again, call for service.