

# 6

## Troubleshooting

This equipment performs self-checks when certain troubles occur. It emits a buzzer and displays the situation, cause and remedial procedure on the screen in order to notify and assist the operator. It also prompts the operator when it is necessary to perform maintenance. These are collectively referred to as “alarms”. This chapter explains about alarms and other possible equipment troubles, their causes and how to remedy the situation. In the following cases, contact the place of purchase or ESPEC CORP.

- When the equipment fails to operate properly after you have taken the prescribed remedial action.
- Anywhere in this manual that you are instructed to “Call for service”.

### **DANGER**

Do the following in event of trouble BEFORE TAKING REMEDIAL ACTION.

- TO PREVENT ELECTRIC SHOCK, without fail, shut OFF power supply at the primary breaker. It is extremely dangerous to work on live equipment. Handling parts while the power is ON could result in electric shock.

### **CAUTION**

- Shut the main breaker OFF before attempting to access the electric parts compartment. Though power is shut OFF automatically via the door switch when the door to the compartment is opened, forgetting at which point in the system power has been shut OFF might result in accident.

## 6.1 Displayed alarms

- (1) When this kind of alarm occurs, the below the ALARM screen appears and with exception to some cases, a buzzer is emitted.  
Also, if the alarm forces equipment to stop operating, the error state is indicated by the revolving pilot lamp. (Revolving pilot lamp is an option.)

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

### 『NOTE』

The trouble buzzer can be turned ON/OFF from the Buzzer & Power Mode screen, which can be selected from the Chamber Setup menu.

ALARM

This button starts flashing when an alarm is generated and continues to flash until the alarm is cleared. Also, you can call up the ALARM screen at anytime by pressing this button, except of course while it is already being displayed.

CLR

Press to clear the alarm entry from the log. The cause of the alarm must be eliminated first.

[Report]

Pressing the alarm entry displays a report in a separate screen that describes the alarm and indicates causes and remedial procedures.

STOP		L	⚡	7/15 (TUE) 2:08:39
Overcooling	(Alarm)	BACK		
<Contents>The temperature inside the chamber has dropped below the overcool protector setting(optional instrumentation panel). The chamber has been stopped.				
<Cause> Possible causes include excessive cooling, the effects of cooling sources inside the chamber, and the overcool protector being set higher than the temperature set point.				
<Action> If the refrigerator is manual control, correct the capacity setting. If cooling sources are overcooling the chamber, reduce the refrigeration % number. Also, correct the overcool protector setting as necessary. Turn system control OFF and ON form the POWER key and resume testing. If the same alarm occurs again, call for service.				

Buzzer Stop

When you press this button, the buzzer is silenced.

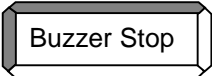
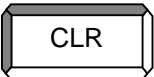
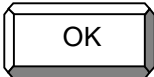


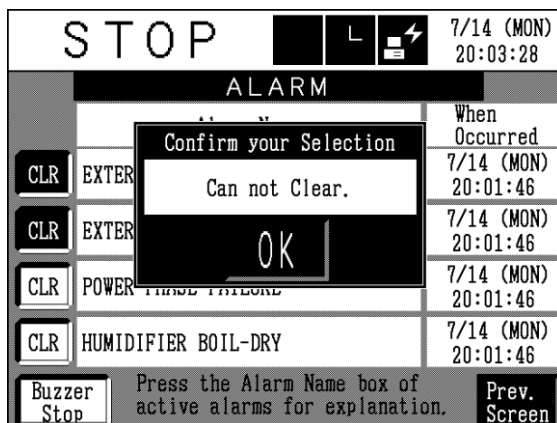
You can press this button to go back the original screen, but the [ALARM] button will continue to flash until the alarm has been cleared.

(2) Take the following action when an alarm is generated. There are 2 types of alarms -“Alarm” and “Warning”- and they are dealt with differently in some respects.

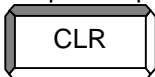
- Alarm           Generated when trouble occurs with the equipment or a single unit. (A buzzer is emitted.)
- Warning       Generated when control is destabilized for reasons other than trouble such as when maintenance is required.

① When an alarm occurs

- First press  to silence the buzzer.
- Eliminate the cause of the trouble as explained in the User’s Manual and the report displayed on the monitor.
- After eliminating the cause, turn power OFF and ON via the [POWER] key on the operating panel. With alarms, the message “Can not Clear” appears on the display when the  button is pressed. Press the  button and shut power OFF.
- To reactivate power, press the [POWER] key again.



② When a warning is generated

- Eliminate the cause of the trouble as explained in the User’s Manual and the report displayed on the monitor.
- Press  left of the alarm entry.

Though warnings do not stop chamber operation, the alarm will remain on the ALARM screen until it has been cleared.

『NOTE』

Control can be maintained when an alarm occurs, provided the backup mode has been turned ON. In the event of a warning, control remains unaffected.

The trouble buzzer can be turned ON/OFF from the Buzzer & Power Mode screen, which can be selected from the Chamber Setup menu.

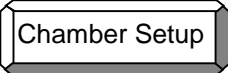
For details on individual alarms, see the alarm tables starting on page 6-6.

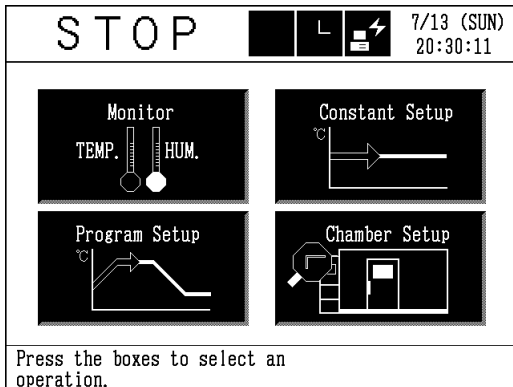
(3) Alarm Report screen


When an alarm has been generated, you can get a report by going to the Chamber Setup menu. You can get a report on alarms while they are still active, from the ALARM screen described in (1), but alarm entries are deleted the moment the actual alarm is cleared. In any case, you can see all alarms having occurred to date on the Alarm Report screen. This screen reports other system information such as refrigerator defrosting and humidifier cleaning as well.

〔NOTE〕

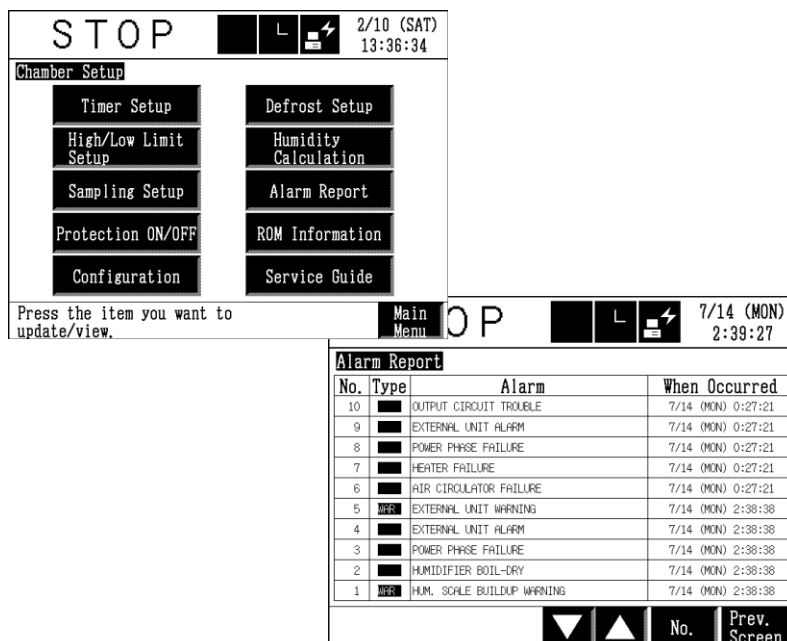
The Alarm Report can hold up to 100 entries. As alarms occur over this number, the system starts overwriting stored data from the oldest alarm first.

To get the Chamber Setup menu, press  on the main menu.



Press . This will call up the Alarm Report screen where you can check the data.

It is useful towards equipment management and it helps servicemen analyze trouble, if you periodically check and keep track of alarms.



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(4) Equipment response in the backup mode

This chamber has a backup feature that can be turned ON/OFF from the chamber setup mode. What it does is allow equipment unaffected by trouble to continue running in the event of trouble somewhere in the system, while the affected unit is shut down.

The backup mode can be turned OFF from the touch screen, but in this situation, the entire system will shut down when trouble occurs.

Though in some cases test conditions cannot be met once the backup mode kicks in, the mode itself has been added to protect specimens against damage which might occur when the entire system is shut down, as well as to minimize lost time as best possible when total shutdown does in fact occur. To help you better understand equipment behavior in the backup mode and so that you may use the chamber more effectively, the below table describes how the chamber responds when trouble occurs. To find out which trouble situations the backup mode works with, see the “(5) Alarm tables”.

『NOTE』

In the Alarm tables on the following pages, “BU” is indicated where the backup mode is available for use.

When the backup mode is ON

Trouble	Equipment response when backup mode kicks in	Program response
Humidifier related trouble	Switches over to temperature-only operations.	Pauses (Held at settings existent at time of trouble.)
Refrigerator related trouble	Unaffected refrigerators continue running. However, the test system shuts down if there is only one refrigerator in the system or if all refrigerators are affected.	Continues running
Other	Test system shutdown	Stops

(5) Alarm tables

Alarms are displayed as a pretext to the backup mode kicking-in. If the mode is OFF when an error occurs, the chamber will stop operating. However, in the program mode, units will pause.

The following codes are used in these tables:

BU: Indicates the backup mode is available against the error in question.

COM. OP: Alarm number of communication function is displayed.(Optional)

Displayed message	CO M. OP	Type of alarm		Equipment response	Description	Probable cause(s)	Remedy
		Alarm	Warning				
SYSTEM ERROR	31	●		Test system down	System error. (Detected even while the chamber is not running.)	System internal error	Turn main power breaker OFF and ON again.
REFRIGERATOR FAILURE	08	●		Test system down	All refrigerators in error state.	Error notification already made for each separate refrigerator	Remedy each separate trouble and turn [POWER] key OFF.
REFRIG.-□: SURFACE TEMP. HIGH  □ Indicates refrigerator No.	08	● BU		For single refrigerator chambers • Test system down  For multiple refrigerator chambers • Refrigerator changeover and continued operation.	Compressor temperature switch tripped because of high surface temperature.	<ul style="list-style-type: none"> <li>• Refrigerator breakdown</li> <li>• Condenser trouble</li> <li>• Gas leak</li> <li>• Overheating</li> <li>• Open-phase</li> </ul>	<ul style="list-style-type: none"> <li>• Turn [POWER] key OFF.</li> <li>• Cool down compressor.</li> </ul>
REFRIG.-□: UNIT FAILURE (For air-cooled spec. only)  □ Indicates refrigerator No.	08	● BU		In program mode, system does not pause.	Temperature rise in refrigerator unit discharge pipe, or reverse phase in unit wiring.	<ul style="list-style-type: none"> <li>• Refrigerator breakdown</li> <li>• Condenser trouble</li> <li>• Gas leak</li> <li>• Overheating</li> <li>• Open-phase</li> </ul>	<ul style="list-style-type: none"> <li>• Turn [POWER] key OFF.</li> <li>• Check cooling water.</li> <li>• Cool down refrigerator.</li> </ul>
REFRIG.-□: OVERCURRENT  □ Indicates refrigerator No.	08	● BU			Compressor thermal relay tripped because of overcurrent.	<ul style="list-style-type: none"> <li>• Refrigerator breakdown</li> <li>• Condenser trouble</li> <li>• Overheating</li> <li>• Open-phase</li> </ul>	<ul style="list-style-type: none"> <li>• Turn [POWER] key OFF.</li> <li>• Check cooling water.</li> <li>• Cool down compressor.</li> </ul>
REFRIG.-□: HIGH PRESSURE  □ Indicates refrigerator No.	08	● BU			Refrigeration circuit high pressure switch tripped because of pressure rise.	<ul style="list-style-type: none"> <li>• Stopped cooling tower fan</li> <li>• Foreign matter inside condenser</li> </ul>	<ul style="list-style-type: none"> <li>• Turn [POWER] key OFF.</li> <li>• Check cooling water.</li> </ul>
REFRIG.-□: LOW PRESSURE  □ Indicates refrigerator No.  (In the case of ACU20 or ACU30)	08	● BU			Refrigeration circuit low pressure switch tripped because of pressure drop.	<ul style="list-style-type: none"> <li>• Evaporator is heavily frosted over.</li> </ul>	<ul style="list-style-type: none"> <li>• Turn [POWER] key OFF.</li> <li>• Defrost system.</li> </ul>

BU: Indicates the backup mode is available against the error in question.

Displayed message	CO M. OP	Type of alarm		Equipment response	Description	Probable cause(s)	Remedy
		Alarm	Warning				
REFRIG.: COOLING WATER FAILURE (Water cooled spec. only)	08	●		Test system down	Water suspension relay tripped because of pressure drop in cooling water line.	<ul style="list-style-type: none"> <li>Stopped cooling tower pump</li> <li>Clogged cooling water strainer</li> <li>Water leak in cooling water line</li> </ul>	<ul style="list-style-type: none"> <li>Turn [POWER] key OFF.</li> <li>Check cooling pump functions.</li> <li>Check for leaks in cooling water line.</li> <li>Clean strainer.</li> </ul>
HUMIDIFIER BOIL-DRY	21	● BU		System switches over from temp. & humidity control to temperature-only control. In program mode, system pauses.	Dry-boil temperature sensor tripped because of temperature rise in humidifier cylinder.	<ul style="list-style-type: none"> <li>Humidifier water supply-line trouble</li> <li>Foreign matter inside humidifier cylinder</li> </ul>	<ul style="list-style-type: none"> <li>Turn [POWER] key OFF.</li> <li>Clean humidifier.</li> </ul>
HUMIDIFIER BOIL-DRY	21	● BU		System switches over from temp. & humidity control to temperature-only control. In program mode, system pauses.	Dry-boil temperature sensor tripped because of temperature rise in humidifier cylinder.	<ul style="list-style-type: none"> <li>Humidifier water supply-line trouble</li> <li>Foreign matter inside humidifier cylinder</li> </ul>	<ul style="list-style-type: none"> <li>Turn [POWER] key OFF.</li> <li>Clean humidifier.</li> </ul>
HUM. SCALE BUILDUP WARNING	21		●	Operation continues uninterrupted. In program mode, system does not pause. * If left unattended for 120 hours, system interprets trouble as error and humidifier stops operating.	Temperature switch inside humidifier cylinder tripped.	Too much scale inside cylinder	Clean humidifier.
HUM. SCALE BUILDUP ALARM	21	● BU		System switches over from temp. & humidity control to temperature-only control. In program mode, system pauses.	Temperature switch inside humidifier cylinder has been in error state for 120 consecutive hours.	Too much scale inside cylinder	Clean humidifier.
HUM. DRAIN FAILURE	26	● BU		In program mode, system pauses.	Humidifier water level does not drop when draining.	<ul style="list-style-type: none"> <li>Drainage pump malfunction</li> <li>Clogged drain line</li> <li>Humidifier float sensor trouble</li> </ul>	Clean humidifier.

Displayed message	CO M. OP	Type of alarm		Equipment response	Description	Probable cause(s)	Remedy
		Alarm	Warning				
HUM. WATER SUPPLY WARNING	26		●	Operation continues uninterrupted. In program mode, system does not pause.	Humidifier was not filled within specified time limit.	<ul style="list-style-type: none"> <li>• Water supply valve not reopend.</li> <li>• Clogged humidifier strainer</li> <li>• Water leak</li> <li>• Low water pressure</li> <li>• Humidifier float sensor trouble</li> <li>• Water supply suspended because safety device in RO water purifier (option) tripped.</li> </ul>	<ul style="list-style-type: none"> <li>• Check valve.</li> <li>• Clean strainer.</li> <li>• Check water supply line.</li> <li>• When water supply is restored, normal operation is automatically resumes.</li> </ul>
HUM. WATER SUPPLY ALARM	26	●		System switches over from temp. & humidity control to temperature-only control. In program mode, system pauses.	Humidifier was not filled within specified time from when "WARNING" was issued.	<ul style="list-style-type: none"> <li>• Water supply valve not reopened.</li> <li>• Clogged humidifier strainer</li> <li>• Water leak</li> <li>• Low water pressure</li> <li>• Humidifier float sensor trouble</li> <li>• Water supply suspended because safety device in RO water purifier (option) tripped.</li> </ul>	<ul style="list-style-type: none"> <li>• Turn [POWER] key OFF.</li> <li>• Check valve.</li> <li>• Clean strainer.</li> <li>• Check water supply line.</li> <li>• Check the safety devices of water purifier.</li> </ul>
HUM. WATER LEVEL FAILURE	21	● BU		System switches over from temp. & humidity control to temperature-only control. In program mode, system pauses.	Humidifier float sensor malfunctioned.	Humidifier float sensor trouble	Turn [POWER] key OFF.
HUMIDIFIER FAILURE	21	● BU		System switches over from temp. & humidity control to temperature-only control. In program mode, system pauses.	Humidifier breaker tripped because of overcurrent.	Short-circuit or leakage current in humidifier circuit	<ul style="list-style-type: none"> <li>• Turn main power breaker OFF.</li> <li>• Reset humidifier breaker inside electric parts compartment.</li> </ul>
HEATER FAILURE	11	●		Test system down	Heater breaker tripped because of overcurrent.	Short-circuit or leakage current in heater circuit	<ul style="list-style-type: none"> <li>• Turn main power breaker OFF.</li> <li>• Reset heater breaker inside electric parts compartment.</li> </ul>
OUTPUT CIRCUIT TROUBLE	19	●		Test system down	Power circuit breaker tripped because of overcurrent.	Short-circuit, leakage current or overcurrent in power circuit.	<ul style="list-style-type: none"> <li>• Turn main power breaker OFF.</li> <li>• Reset power circuit breaker inside electric parts compartment.</li> </ul>



Displayed message	CO M. OP	Type of alarm		Equipment response	Description	Probable cause(s)	Remedy
		Alarm	Warning				
OVERHEATING	06	●		Test system down	Overheat protector tripped because of abnormal temperature rise inside chamber.	<ul style="list-style-type: none"> <li>• Heat generation from specimens</li> <li>• Low overheat protector setting</li> </ul>	<ul style="list-style-type: none"> <li>• Turn [POWER] key OFF.</li> <li>• Remove heat-generating specimens.</li> <li>• Check overheat protector setting.</li> </ul>
AIR CONDITIONER OVERHEATING	06	●		Test system down	The heater temperature switch tripped because of abnormal temperature rise inside air conditioner.	<ul style="list-style-type: none"> <li>• Heat generation from specimens</li> <li>• Heater control error</li> <li>• Air circulator trouble</li> <li>• Power breaker was shut off during high temperature testing.</li> </ul>	<ul style="list-style-type: none"> <li>• Turn [POWER] key OFF.</li> <li>• Cool down air conditioner to max. 50°C by forcing air inside.</li> </ul>
POWER PHASE FAILURE	19	●		Test system down	Reverse phase or open phase detected on primary side (Detected even while the chamber is not running. )	Wrong connection in primary power line	<ul style="list-style-type: none"> <li>• Turn main power breaker OFF.</li> <li>• Check power supply connections.</li> </ul>
ABS. HIGH LIMIT: TEMP.	02	●		Test system down	Temperature inside chamber exceeded upper limit absolute alarm setting.	<ul style="list-style-type: none"> <li>• Heat generation from specimens</li> <li>• Low upper limit setting</li> </ul>	<ul style="list-style-type: none"> <li>• Turn [POWER] key OFF.</li> <li>• Remove heat-generating specimens.</li> <li>• Check upper limit alarm setting.</li> </ul>
CHECK HUMIDIFIER SWITCH	19		●	<ul style="list-style-type: none"> <li>• Operation continues uninterrupted. In program mode, system pauses.</li> <li>• Humidifier stops operating.</li> </ul>	Humidifier ON/OFF switch was set to OFF when humidity test started.	Humidifier is now being cleaned or switch was left in OFF position. NOTE: Water supply starts as soon as this switch is set to ON or when the [CLR] button is pressed.	Always set humidifier switch to ON after cleaning.
AIR CIRCULATOR FAILURE	07	●		Test system down	Air circulator (AC unit) thermal relay tripped because of overcurrent.	Overloaded air circulator motor	<ul style="list-style-type: none"> <li>• Turn [POWER] key OFF.</li> <li>• Halt operations shortly to cool down air circulator motor.</li> </ul>

Displayed message	CO M. OP	Type of alarm		Equipment response	Description	Probable cause(s)	Remedy
		Alarm	Warning				
ABS. HIGH LIMIT: HUM.	22		●	<ul style="list-style-type: none"> <li>• Operation continues uninterrupted. In program mode, system pauses.</li> <li>• Humidifier stops operating.</li> </ul>	Humidity inside chamber exceeded upper limit absolute alarm setting.	<ul style="list-style-type: none"> <li>• Temporary rise in RH during step transition in program mode</li> <li>• Low upper limit setting</li> </ul>	<ul style="list-style-type: none"> <li>• Check upper limit alarm setting.</li> <li>• Operation is restored automatically when humidity drops below setting.</li> </ul>
ABS. LOW LIMIT: TEMP.	03	●		Test system down	Temperature inside chamber dropped below lower limit absolute alarm setting.	<ul style="list-style-type: none"> <li>• Excessive refrigeration</li> <li>• Cooling caused by specimens</li> <li>• High lower limit setting</li> </ul>	<ul style="list-style-type: none"> <li>• Turn [POWER] key OFF.</li> <li>• Remove trouble-causing specimens.</li> <li>• Check lower limit alarm setting.</li> </ul>
ABS. LOW LIMIT: HUM.	23		●	<ul style="list-style-type: none"> <li>• Operation continues uninterrupted. In program mode, system pauses.</li> <li>• Heater stops operating.</li> </ul>	Humidity inside chamber dropped below lower limit absolute alarm setting.	<ul style="list-style-type: none"> <li>• Temporary drop in RH during step transition in program mode</li> <li>• High lower limit setting</li> </ul>	<ul style="list-style-type: none"> <li>• Check lower limit alarm setting.</li> <li>• Operation is restored automatically when humidity rises above setting.</li> </ul>
UPPER DEV. LIMIT: TEMP.	01		●	<ul style="list-style-type: none"> <li>• Operation continues uninterrupted. In program mode, system pauses.</li> <li>• Heater and humidifier stop operating.</li> </ul>	Temperature inside chamber exceeded upper limit deviation alarm setting.	<ul style="list-style-type: none"> <li>• Heat generation from specimens</li> <li>• Low upper limit setting</li> </ul>	<ul style="list-style-type: none"> <li>• Remove heat-generating specimens.</li> <li>• Check upper limit setting and set 10°C higher than test temperature.</li> <li>• Operation is restored automatically when temperature drops below setting.</li> </ul>
UPPER DEV. LIMIT: HUM. (Option)	01		●	<ul style="list-style-type: none"> <li>• Operation continues uninterrupted. In program mode, system pauses.</li> <li>• Heater and humidifier stop operating.</li> </ul>	Humidity inside chamber exceeded upper limit deviation alarm setting.	<ul style="list-style-type: none"> <li>• Temporary rise in RH during step transition in program mode</li> <li>• Low upper limit setting</li> </ul>	<ul style="list-style-type: none"> <li>• Check upper limit alarm setting and set 10% higher than test humidity.</li> <li>• Operation is restored automatically when humidity drops below setting.</li> </ul>

Displayed message	CO M. OP	Type of alarm		Equipment response	Description	Probable cause(s)	Remedy
		Alarm	Warning				
LOWER DEV. LIMIT: TEMP. (Option)	01		●	<ul style="list-style-type: none"> <li>• Operation continues uninterrupted. In program mode, system pauses.</li> <li>• Refrigerator stops operating.</li> </ul>	Temperature inside chamber dropped below lower limit deviation alarm setting.	<ul style="list-style-type: none"> <li>• Chamber door is open.</li> <li>• Ventilation fan is running.</li> <li>• Excessive refrigeration</li> <li>• Cooling caused by specimens</li> </ul>	<ul style="list-style-type: none"> <li>• Check door and ventilation fan.</li> <li>• Remove trouble-causing specimens.</li> <li>• Operation is restored automatically when humidity rises above setting.</li> </ul>
LOWER DEV. LIMIT: HUM. (Option)	01		●	<ul style="list-style-type: none"> <li>• Operation continues uninterrupted. In program mode, system pauses.</li> <li>• Refrigerator stops operating.</li> </ul>	Humidity inside chamber dropped below lower limit deviation alarm setting.	<ul style="list-style-type: none"> <li>• Temporary drop in RH during step transition in program mode</li> <li>• High lower limit setting</li> </ul>	<ul style="list-style-type: none"> <li>• Check lower limit alarm setting and 10% lower than test humidity.</li> <li>• Operation is restored automatically when humidity rises above setting.</li> </ul>
BURN-OUT AI-CH1	00	●		Test system down	Disconnected CH1 input in temperature controller.	<ul style="list-style-type: none"> <li>• Loose terminal B1 (-) on temperature controller</li> <li>• Disconnected thermocouple</li> </ul>	Turn [POWER] key OFF.
BURN-OUT AI-CH2	00	●		Test system down	Disconnected CH2 input in temperature controller.	<ul style="list-style-type: none"> <li>• Loose terminal B2 (-) on temperature controller</li> <li>• Disconnected thermocouple</li> </ul>	Turn [POWER] key OFF.

Alarms related to optional equipment

BU: Indicates the backup mode is available against the error in question.

Displayed message	CO M. OP	Type of alarm		Equipment response	Description	Probable cause(s)	Remedy
		Alarm	Warning				
OVERCOOLING (Option)	10	●		Test system down	Overcool protector tripped because of abnormal temperature drop inside chamber.	<ul style="list-style-type: none"> <li>Excessive refrigeration.</li> <li>Cooling caused by specimens.</li> <li>High overcool protector setting.</li> </ul>	<ul style="list-style-type: none"> <li>Turn [POWER] key OFF.</li> <li>Remove trouble-causing specimens.</li> <li>Check overcool protector setting.</li> </ul>
OPERATOR SAFETY SWITCH TRIP (Option)	19	●		<ul style="list-style-type: none"> <li>Test system down</li> <li>Alarm buzzer emitted.</li> </ul>	Operator safety switch inside the chamber was triggered. (Detected even while the chamber is not running.)	Someone inside chamber triggered operator safety switch.	<ul style="list-style-type: none"> <li>Press reset [BZ. OFF] key on operating panel and check inside chamber.</li> <li>Free personnel from inside.</li> <li>Turn [POWER] key OFF.</li> </ul>
DEHUMIDIFIER FAILURE (Option)	19	● BU		<ul style="list-style-type: none"> <li>Dehumidifier only stops operating.</li> <li>Operation continues uninterrupted.</li> </ul>	Safety device for external dehumidifier tripped.	See dehumidifier's instruction manual for error description and cause.	<ul style="list-style-type: none"> <li>Turn main power breaker OFF.</li> <li>Eliminate cause of error inside dehumidifier.</li> </ul>
INVERTER FAILURE (Option)	07	●		Test system down	Error detected in velocity variable device inverter. (air circulator fan)	Inverter error	Turn [POWER] key OFF.
EXTERNAL UNIT ALARM (Option)	19	●		Test system down	Error detected in connected external unit. (Detected even while the chamber is not running.)	See external unit's instruction manual for error description and cause.	<ul style="list-style-type: none"> <li>Turn [POWER] key OFF.</li> <li>Eliminate cause of error inside external unit.</li> </ul>
EXTERNAL UNIT WARNING (Option)	19		●	Operation continues uninterrupted.	Warning condition detected in connected external unit. (Detected even while the chamber is not running.)	See external unit's instruction manual for error description and cause.	<ul style="list-style-type: none"> <li>Eliminate cause of error inside external unit.</li> <li>Operation is restored automatically when warning state is cleared.</li> </ul>
EMERGENCY STOP SWITCH TRIP (Option)	19	●		Test system down	Emergency stop switch triggered (Detected even while the chamber is not running.)	Emergency stop switch was pressed for some reason.	<ul style="list-style-type: none"> <li>Check why switch was pressed.</li> <li>Turn [POWER] key OFF.</li> </ul>