



Operation manual / Network Guide

Ethernet Computer Interface

Applicable models:

- **Platinous J series**
Temperature and humidity chamber

4001504148300
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ESPEC CORP.

- Read this manual carefully before using the equipment.
- Familiarize yourself with the “Safety Precautions” section before using the equipment.
- Keep this manual handy for future reference.

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Read this section before using the equipment.

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Introduction

! Read this section before using the equipment.

For restricted use

The test chamber should be operated only by experienced engineers or persons who have received training in proper usage from an experienced engineer.

■ Definition of an experienced engineer

A person who understands the purpose of use of the chamber, has received training in the operation method, daily maintenance and inspections, etc., and can foresee and prevent risks associated with common sources of hazards such as electricity, etc.

Safety indications

The following safety indications are used throughout this manual.

■ The following signs represent the degrees of danger to users.

 DANGER	Means that extremely dangerous consequences may arise, with the risk of death or serious injury to the user, if the chamber is handled improperly.
 WARNING	Means that dangerous consequences may arise, with the risk of death or serious injury to the user, if the chamber is handled improperly.
 CAUTION	Means that dangerous consequences may arise, with the risk of minor injury or light wound to the user, if the chamber is handled improperly.

■ Labels that instruct the user to avoid danger.

 PROHIBITED	This mark means that specific actions are prohibited in order to prevent a dangerous situation from arising.
 Imperative Action Required	This mark means that it is imperative for the user to take specific actions (instructions) in order to prevent a dangerous situation from arising.

■ Labels that indicate information on physical damage and environmental contamination.

Notice	This mark means dangerous consequences may arise, with the possibility of damage to equipment and facilities, or environmental pollution, if the equipment is handled incorrectly.
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Keywords

■ The following keywords are used in this manual.

Note	Provides information necessary for gaining full performance from the chamber or to prevent damage to the equipment.
Procedure	Explains how to operate the chamber on a step-by-step basis.
Reference	Offers additional information.

Chapter 1 Overview

You can use the standard equipped Ethernet interface of the chamber to use the communication function.

See the basic guide for details on the location of communication terminals (Ethernet port).

1.1 Network

Ethernet can be connected in a point-to-point manner with the host computer.

1.2 Communication interfaces

An Ethernet (100BASE-TX) is used as the interface connector.

The protocol is TCP/IP. Use port number 57732 to connect.

◆ Reference ◆

See the appendix for Platinous J series products with no built-in Ethernet computer interface.

1.3 Data handled by the network

1.3.1 Data types

Data is handled as either command data or response data.

■ Command data

Data sent from the host computer to the chamber is treated as command data. There are two types of command data.

- Monitor commands
These commands are used to monitor the chamber's operating status or the conditions inside the chamber.
- Setting commands
These commands are used to change the operation state of the chamber or the internal chamber temperature or humidity target settings.

■ Response data

Data returned from the chamber as a response to the command data from the host computer is treated as response data. There are two types of response data.

- Reception status
This response tells the host computer whether the setting command it sent was processed correctly or not.

<If the setting command is correctly processed>
"OK: Setting command"

<If the setting command is not correctly processed>
"NA: Error message"
(See "Table 1.1 Error messages" for details about the error message.)

- Monitor data
This response is sent in response to monitor commands from the host computer.

<If the setting command is correctly processed>
"Response"
(See "3.2 Monitor command details" for details about the response.)

<If the setting command is not correctly processed>
"NA: Error message"
(See "Table 1.1 Error messages" for details about the error message.)

◆ Reference ◆

It may take some time to activate the instrumentation panel of the chamber. Timeout may occur because communication with the chamber is interrupted for about 60 seconds at startup, including during a restart after a power failure.

1.3.2 Data format

■ Command data format

Command data sent from the host computer has the following format.

`main-command[,option-parameter]` `delimiter`

◆ Reference ◆

Delimiter

The delimiter is fixed to CRLF.

■ Response data format

The response data returned by the chamber as a response to the command data has the following format.

`reception-state-data or monitor-data` `delimiter`

1.3.3 Error messages

When the command data sent from the host computer cannot be processed normally, the chamber displays "NA:" followed by the set error message, and sends it to the host computer as response data.

The types and descriptions of the error messages are shown below.

Table 1.1 Error messages

Error message	Error description	Example:
CMD_ERR	Main command error	<ul style="list-style-type: none"> "ROM?" entered as "RUM?"
PARA_ERR	Option parameter error	<ul style="list-style-type: none"> Text was entered for numerical-only parameter.
DATA NOT READY	Specified data does not exist.	<ul style="list-style-type: none"> An unregistered program number was specified.
DATA OUT OF RANGE	Specified value outside the setting range	<ul style="list-style-type: none"> "TEMP,S300" was specified for the setting range of 0°C to 200°C.
PROTECT ON	Setting prohibited by the communication function. [Set Protection] - [Remote setting] is set to [ON] on the chamber.	<ul style="list-style-type: none"> Attempt to change the temperature set point while the remote setting is on.
INVALID REQ	Unsupported function specified	<ul style="list-style-type: none"> A command related to the time signal was sent to a chamber not equipped with the time signal option.
CHB NOT READY	Command specified when the chamber is not ready to receive*	<ul style="list-style-type: none"> Attempt to change KEYPROTECT when the panel power is off. "PRGM,PAUSE" (pause) was executed when the chamber was stopped.

* For details, see "Table 3.12 Reception state list".

■ Understanding the difference between "program operation" and "remote operation"

When changing the chamber from constant operation (the function for operating with the same settings) to an operation that changes automatically with the elapsed time, there are two methods of this network that are described here: program operation and remote operation. Familiarize yourself with the differences between the two and use them accordingly.

Program operation

This refers to an operation that uses program data that can be edited and executed on the instrumentation.

Advantage: Operations are managed on the chamber until the program ends and are not affected by host computer operations (including network connection issues and host computer shutdown).

Disadvantage: There are restrictions to the number of steps and patterns.

Remote operation

This refers to a single-step program operation that can be executed only on the network.

Advantage: Operates on a host computer, so it does not have the restrictions of the chamber (number of steps and programs), and patterns can be created.

Disadvantage: Affected by host computer operations (including network connection issues and host computer shutdown), so careful consideration must be given to the possibility of the program shutting down and no longer being executed.



Caution



When performing operation inside or around the test area of the chamber, ensure that control is not being performed remotely via LAN or transmitted communication. If there is a possibility that the equipment is being operated remotely, take necessary precautions such as turning on remote operation protection.

Sudden operation of the chamber can result in injury.

For details about configuring the protection settings, see "2.2 Setting protection".



Notify operators by indicating on the chamber that remote control is being performed.

1.4 Data transfer



Caution



Wait to receive the response of a previous command before sending the next command.

If a subsequent command is sent without waiting for the response of a previous command, communication may not be successful.



When sending commands to the same address, provide a time lag from when reception of the first command completes to when the next command is sent.

Otherwise, the network load may prevent normal control.

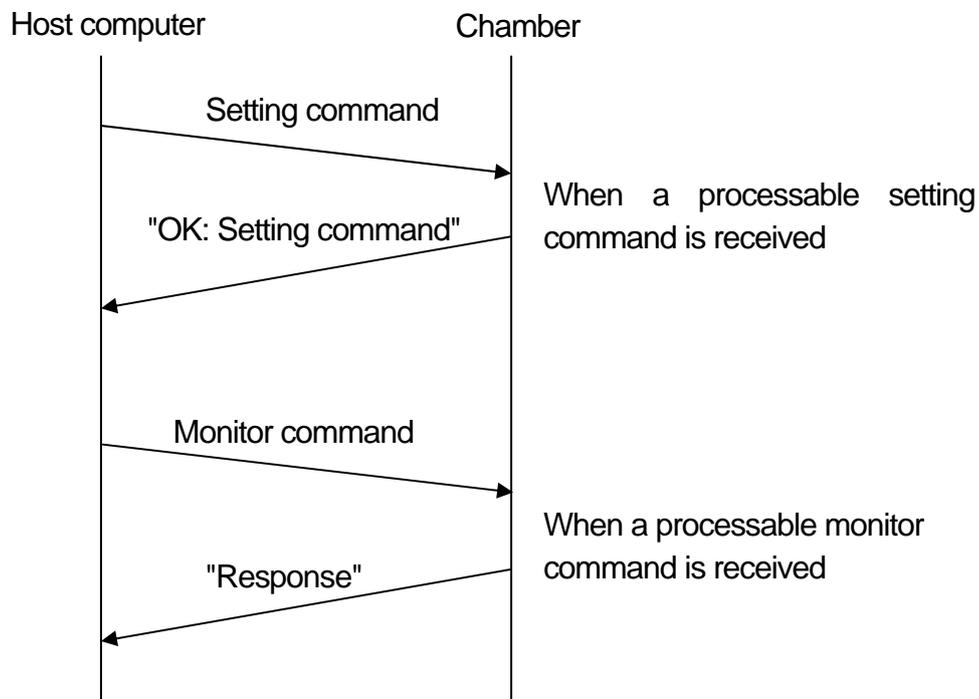
<Procedure>

- 1) Send a command to the specified IP address.
- 2) Receive a response from the specified IP address.
- 3) Wait the fixed amount of time as called for by the type of command sent in procedure 1.
(* See the delay time and monitor updating.)
- 4) Send a command to the specified IP address.

* The time lag should be as follows.

- For monitor commands
0.2 seconds or more.
However, program-related commands (PRGM DATA?, RUN PRGM?, etc.) are 0.3 seconds or longer.
- For setting commands
0.5 seconds or longer.
However, program-related commands (PRGM DATA WRITE, RUN PRGM, etc.) are 1 second or longer.* Monitor updating is as follows.
- Updating of a monitor value requires at least 0.5 seconds.
- Updating of the operation state when the operation is changed with a setting command requires at least 1.0 second.

The chamber returns response data (reception state data or monitor data) in response to the command data sent from the host computer.



Chapter 2 Configuration

2.1 Communication settings

You can set up communications from the Configuration (Set Communication) screen in Chamber Setup mode.

For details about the management settings, see the controller guide in the operation manual.

<Procedure>

- 1) Select "Set Communication" under "Configuration" in the "Chamber Setup" tab.



- 2) Select "Set LAN".



Set the IP address, subnet mask, and gateway address.

When finished, save the settings and return to the monitor screen.

2.1 Setting protection

Protection settings can be configured to prevent erroneous operations during setup and when configuring operation settings.

You can also limit the functionality of the chamber. Set the protection as required.

Press [Set Protection] on the Chamber Setup screen.



Table 2.1 Set protection items

	Operation setting	When protection is set to [ON]
(1)	Prevent Data Update	Disables all operations related to settings.
(2)	Prevent Run CTRL Change	Disables the key operation on the operation mode screen and the operation of turning off the power of the instrumentation panel.
(3)	Prevent Remote CTRL RS-485/RS-232C/GPIB	Disables the execution of the request of data change and operation status change from RS-485/RS-232C/GPIB.
	Prevent Remote CTRL LAN	Disables the execution of the request of data change and operation status change from LAN.

		Setting details
(4)	Set LAN/Ext Memory Security	<p>You can limit the usage of the LAN feature and of external memory.</p>  <p>(1) Screen Password Register a password to prevent unauthorized changes to the settings on this screen.</p> <p>(2) LAN Use If you will not use the Web function through a LAN, select [Disable]. The settings on the communications setup screen and the IP address setup screen will both be displayed in gray, and you will not be able to configure these settings. The default is [Enable].</p> <p>(3) Ext Memory Use If you will not use the external memory function, select [Disable]. Alternatively, you can set an access password that must be entered to use the external memory function.</p> <ul style="list-style-type: none"> * You can change this setting only when external memory is not connected. The default is [Enable]. * Even if you select [Disable], you can still collect back trace data.

◆ Reference ◆

- If protection is set for the operation performed, a confirmation screen displaying the message "Protection is ON" appears.
 - If the breaker is turned on again with operation protection enabled, only the power switch of the instrumentation can be turned on.
 - If an alarm occurs, Prevent Data Update, Prevent Run CTRL Change, and Prevent Remote CTRL are cancelled automatically to enable emergency stoppage of the chamber and to allow changes to the settings. However, for the sake of information security, Network Screen Password, LAN Use, Ext Memory Use, and Access Password are not cancelled.
- The specific operation method for the TCP/IP communication connection depends on the devices of the computer being used. Consult with the person in charge of the communication environment or the equipment manager as necessary.

Chapter 3 Commands

3.1 List of commands

The monitor and setting commands are shown in Table 3.1 and Table 3.2, respectively.

Table 3.1 List of monitor commands

Command	Description	Platinous J
ROM?	Monitors the ROM version.	○
DATE?	Monitors the date of the internal calendar.	○
TIME?	Monitors the current time of the internal calendar.	○
SRQ?	Monitors the SRQ status.	○
MASK?	Monitors the SRQ status mask setting.	○
TIMER ON?	Monitors the number of the timer enabled for startup.	○
TIMER USE?	Monitors the number of the set timer.	○
TIMER LIST?	Monitors the timer setting information.	○
ALARM?	Monitors information related to alarms.	○
KEYPROTECT?	Monitors the protection setting.	○
TYPE?	Monitors the chamber information.	○
MODE?	Monitors the operation mode.	○
MON?	Monitors the operation state.	○
TEMP?	Monitors information related to the temperature.	○
HUMI?	Monitors information related to the humidity.	○
SET?	Monitors information related to the refrigerator setting.	○
REF?	Monitors the output state of the refrigerator.	○
RELAY?	Monitors the time signal setting.	○
%?	Monitors the control output (heater output).	○
CONSTANT SET?	Monitors the setting of constant setup.	△ ^{*3}
PRGM MON?	Monitors the operation state of the program that is operating.	○
PRGM SET?	Monitors the end setting, etc., of the program that is operating.	○
PRGM USE?	Monitors the number of set program patterns.	○
PRGM DATA?	Monitors the details of the program pattern.	○
SYSTEM SET?	Monitors the on-board specimen temperature information.	△ ^{*2}
MON PTC?	Monitors the operation state (including specimen temperature information).	△ ^{*2}
SET PTC?	Monitors the specimen temperature control that is operating.	△ ^{*2}
PTC?	Monitors the specimen temperature control parameters.	△ ^{*2}
TEMP PTC?	Monitors the specimen temperature.	△ ^{*2}
PRGM DATA PTC?	Monitors the details of the program pattern (including specimen temperature information).	△ ^{*2}

Command	Description	Platinous J
RUN PRGM MON? ^{*1}	Monitors the operation state of the remote program that is operating.	○
RUN PRGM? ^{*1}	Monitors the settings of the remote program that is operating.	○

*1: "Program operation" of the network refers to an operation that uses program data that can be edited and executed on the controller.

"Remote program operation" refers to a single-step program operation that can be edited, started, and managed on the network.

*2: PTC (Product Temperature Control) option required.

*3: PTC (Product Temperature Control) option required to set product temperature control.

Table 3.2 Setting command list

Command	Description	Platinous J
DATE	Changes the date of the internal calendar.	○
TIME	Changes the time of the internal calendar.	○
MASK	Sets the SRQ status mask.	○
SRQ	Clears the SRQ status.	○
TIMER WRITE	Sets the timer.	○
TIMER ERASE	Deletes the timer setting.	○
TIMER	Starts the timer.	○
KEYPROTECT	Sets the protection.	○
POWER	Turns panel power ON/OFF.	○
TEMP	Configures settings related to the temperature.	○
HUMI	Configures settings related to the humidity.	○
SET	Sets refrigerator capacity control.	○
RELAY	Turns time signals ON/OFF.	○
PRGM	Controls the program that is operating.	○
MODE	Sets the operating mode.	○
PRGM DATA WRITE	Edits the program data.	Δ ^{*3}
PRGM ERASE	Deletes the program data.	○
RUN PRGM ^{*1}	Creates and starts remote programs.	○
TEMP PTC	Configures settings related to the specimen temperature in constant setup.	Δ ^{*2}
PTC	Sets the specimen temperature control parameters.	Δ ^{*2}

*1: "Program operation" of the network refers to an operation that uses program data that can be edited and executed on the controller.

"Remote program operation" refers to a single-step program operation that can be edited, started, and managed on the network.

*2: PTC (Product Temperature Control) option required.

*3: PTC (Product Temperature Control) option required to set product temperature control.

3.2 Monitor command details

Monitor commands have the following format.

Main command [, optional parameter]

- In the description, spaces and quotation marks ("") are used to highlight certain areas. For details about the usable characters, see "1.3 Data handled by the network".

■ ROM version monitor

Monitor command		Description, monitor command example, response data format, or response example
Main command	Option parameter	
ROM?	-	<Description> Returns the version of the ROM for the temperature control unit of the chamber.
		<Monitor command example> "ROM?"
		<Response format> "ROM type ROM version"
		<Response example> "P3ARCCN 30.00STD"
	DISP	<Description> Returns the version of the ROM for the display unit of the chamber.
		<Monitor command example> "ROM?, DISP"
		<Response format> "ROM type ROM version"
		<Response example> "P3ARCDS 30.00STD"
	CONT	<Description> Returns the version of the ROM for the temperature control unit of the chamber.
		<Monitor command example> "ROM?, CONT"
		<Response format> "ROM type ROM version"
		<Response example> "P3ARCCN 30.00STD"

■ Date monitor

Monitor command		Description, monitor command example, response data format, or response example
Main command	Option parameter	
DATE?	-	<Description> Returns the date of the internal calendar.
		<Monitor command example> "DATE?"
		<Response format> "Year.Month/Day"
		<Response example> "12.03/04"

■ Time monitor

Monitor command		Description, monitor command example, response data format, or response example
Main command	Option parameter	
TIME?	-	<Description> Returns the current time of the internal calendar.
		<Monitor command example> "TIME?"
		<Response format> "Hour:Minute:Second"
		<Response example> "18:00:00"

■ Interrupt information monitor

Monitor command		Description, monitor command example, response data format, or response example
Main command	Option parameter	
SRQ?	-	<p><Description> Returns the state of the SRQ status.</p> <p><Monitor command example> "SRQ?"</p> <p><Response format> "SRQ1 SRQ2 SRQ3 SRQ4 SRQ5 SRQ6 SRQ7 SRQ8"</p> <p><Response example> "01000000" SRQ1:Not connected SRQ2:When an alarm occurs on the chamber, 1 is set. SRQ3:When a single-step operation ends in remote program operation, 1 is set. SRQ4:When the state transitions from power off to operation, or vice versa, 1 is set. SRQ5:Not connected SRQ6:Not connected SRQ7:Reserved with the SRQ function for GPIB communication SRQ8:Not connected</p> <p>(Caution)</p> <ul style="list-style-type: none"> • If the MASK setting command is not used to set an interrupt mask, the appropriate SRQ will not become "1" even if an event allocated to SRQ occurs. (For details, see the MASK setting command.) • An SRQ status set to "1" will be retained even if the event is canceled. <p>The SRQ status is reset in the following cases.</p> <ol style="list-style-type: none"> (1) When the "SRQ,RESET" setting command is sent (2) When the chamber main power is turned off (3) When address expression "01" is added to "SRQ?" and sent

■ Interrupt mask monitor

Monitor command		Description, monitor command example, response data format, or response example
Main command	Option parameter	
MASK?	-	<Description> Returns the value of the interrupt mask bit.
		<Monitor command example> "MASK?"
		<Response format> "SRQ1 SRQ2 SRQ3 SRQ4 SRQ5 SRQ6 SRQ7 SRQ8"
		<Response example> "01000000" For bit allocations, see the "SRQ?" monitor command.

■ Valid timer monitor

Monitor command		Description, monitor command example, response data format, or response example
Main command	Option parameter	
TIMER ON?	-	<Description> Returns the number of valid timers and the timer number.
		<Monitor command example> "TIMER ON?"
		<Response format> "number-of-valid-timers [,timer-number] [,timer-number]"
		<Response example> "2, 1, 2" <ul style="list-style-type: none"> • The timer numbers are as follows. <ul style="list-style-type: none"> 0: Quick timer 1: Start timer 2: End timer

■ Timer usage monitor

Monitor command		Description, monitor command example, response data format, or response example
Main command	Option parameter	
TIMER USE?	-	<Description> Returns the number of set timers and the timer number.
		<Monitor command example> "TIMER USE?"
		<Response format> "number-of-set-timers [,timer-number] [,timer-number]"
		<Response example> "2, 1, 2" <ul style="list-style-type: none"> • The timer numbers are as follows. <ul style="list-style-type: none"> 0: Quick timer 1: Start timer 2: End timer

■ Timer content monitor

Monitor command		Description, monitor command example, response data format, or response example
Main command	Option parameter	
TIMER LIST?	0	<Description> Returns the settings of the quick timer.
		<Monitor command example> "TIMER LIST?, 0"
		<Response format> "operation-mode ,set-time" or "stop-mode ,set-time"
		<Response example> For details about operation mode and stop mode, see Table 3.4 and Table 3.5. • Returns "NA:DATA NOT READY" when timer data is not set.
	1	<Description> Returns the settings of timer 1 (start timer).
		<Monitor command example> "TIMER LIST?, 1"
		<Response format> "timer-number ,start-mode ,operation-mode"
		<Response example> For details about start mode and operation mode, see Table 3.3 and Table 3.4. • Returns "NA:DATA NOT READY" when timer data is not set.
	2	<Description> Returns the settings of timer 2 (end timer).
<Monitor command example> "TIMER LIST?, 2"		
<Response format> "timer-number, start-mode, stop-mode"		
<Response example> For details about start mode and stop mode, see Table 3.3 and Table 3.5. • Returns "NA:DATA NOT READY" when timer data is not set.		

Table 3.3 Start mode details

Setting	Response data display	Response example
First execution mode	"MODE1,start-date,start-time"	"MODE1,12.03/04,10:00"
Weekly execution mode	"MODE2,start-day,start-time"	"MODE2,SAT,23:00"
Daily execution mode	"MODE3,start-time"	"MODE3,0:00"

The start days are expressed as follows.

Monday: "MON"

Tuesday: "TUE"

Wednesday: "WED"

Thursday: "THU"

Friday: "FRI"

Saturday: "SAT"

Sunday: "SUN"

Multiple start days can be specified.

To specify multiple days, use slashes (/).

"MODE2,MON/SAT,10:00"

Table 3.4 Operation mode details

Setting	Response data display	Response example
Program operation	"RUN, RAM: pattern-number, STEPxx"	"RUN, RAM: 1, STEP1"
Constant operation	"CONSTANT"	"CONSTANT"

Table 3.5 Stop mode details

Setting	Response data display	Response example
All operation stop	"STANDBY"	"STANDBY"
Power off	"OFF"	"OFF"

■ Alarm status monitor

Monitor command		Description, monitor command example, response data format, or response example
Main command	Option parameter	
ALARM?	-	<p><Description> Returns the number of occurring alarms and the alarm number.</p> <p><Monitor command example> "ALARM?"</p> <p><Response format> "number-of-alarms [,alarm-number] [,alarm-number]..."</p> <p><Response example> "2, 1, 7"</p> <ul style="list-style-type: none"> • The same alarm numbers are not counted in the number of alarms. • The maximum number of occurring alarms is 16. • "0" is returned when no alarm has been generated.

Table 3.6 List of alarms1

Alarm number	Alarm name	Remarks
0	SENSOR BURN-OUT: TEMP CONTROLLER (TC1)	
0	SENSOR BURN-OUT: TEMP CONTROLLER (TC2)	
0	SENSOR BURN-OUT: TEMP CONTROLLER (RTD)	
8	SENSOR BURN-OUT: TEMP CONTROLLER (TC5)	
8	SENSOR BURN-OUT: TEMP CONTROLLER (TC6)	
8	SENSOR BURN-OUT: TEMP CONTROLLER (TC7)	
8	SENSOR BURN-OUT: TEMP CONTROLLER (TC8)	
8	SENSOR BURN-OUT: TEMP CONTROLLER (TC9)	
8	SENSOR BURN-OUT: TEMP CONTROLLER (TC10)	
8	SENSOR BURN-OUT: TEMP CONTROLLER (TC11)	
8	SENSOR BURN-OUT: TEMP CONTROLLER (TC12)	
0	SENSOR BURN-OUT: TEMP CONTROLLER (TC11)	Products with wide-view windows or wide-view hand-in ports (optional)
0	SENSOR BURN-OUT: TEMP CONTROLLER (TC12)	Products with wide-view windows or wide-view hand-in ports (optional)
0	SENSOR BURN-OUT: EXT ANALOG BOARD (RTD1)	Products with PTC (Product Temperature Control) (optional)
0	SENSOR BURN-OUT: TEMP CONTROLLER (DC)	Products with an electrostatic capacitive-type humidity sensor control system (optional) Products with stability testing (optional)

Alarm number	Alarm name	Remarks
0	SENSOR BURN-OUT: PRODUCT TEMP SENSOR ALARM	Products with PTC (Product Temperature Control) (optional)
0	SENSOR BURN-OUT:PRODUCT TEMP SENSOR	Products with PTC (Product Temperature Control) (optional)
1	UPPER DEV LIMIT: TEMP	
2	ABS HIGH LIMT: TEMP	
3	ABS LOW LIMT: TEMP	
6	HEATER FAILURE	
7	AIR CIRCULATOR FAILURE	
8	OUT-OF-RANGE: TEMP CONTROLLER SENSOR (TC5)	
8	OUT-OF-RANGE: TEMP CONTROLLER SENSOR (TC6)	
8	OUT-OF-RANGE: TEMP CONTROLLER SENSOR (TC7)	
8	OUT-OF-RANGE: TEMP CONTROLLER SENSOR (TC8)	
8	OUT-OF-RANGE: TEMP CONTROLLER SENSOR (TC9)	
8	OUT-OF-RANGE: TEMP CONTROLLER SENSOR (TC10)	
8	OUT-OF-RANGE: TEMP CONTROLLER SENSOR (TC11)	
8	OUT-OF-RANGE: TEMP CONTROLLER SENSOR (TC12)	
8	CONDENSER FAN FAILURE	
8	COOLING FAN FAILURE	
8	REFRIG-1 PRESSURE: HI PRESS	
8	REFRIG-1 PRESSURE: LO PRESS	
8	REFRIG-1 DISCHARGE TEMP	
8	REFRIG-1 COMP SURFACE TEMP	
8	REFRIG-1 FROST ALARM	
8	REFRIG-1 COMP CURRENT VALUE	
8	REFRIG-2 PRESSURE: HI PRESS	
8	REFRIG-2 PRESSURE: LO PRESS	
8	REFRIG-2 DISCHARGE TEMP	
8	REFRIG-2 COMP SURFACE TEMP	
8	REFRIG-2 FROST ALARM	
8	REFRIG-2 FROST	
8	REFRIG-2 COMP CURRENT VALUE	
8	REFRIG-3 PRESSURE: HI PRESS	
8	REFRIG-3 COMP CURRENT VALUE	
8	REFRIG. COOLING WATER FAILURE	Products with a refrigeration circuit water-cooled system (optional)
8	REFRIGERATOR SYSTEM ERROR	Products with a DC inverter refrigeration circuit system (optional)
9	DOOR OPEN (RUNNING)	
9	DOOR OPEN (PAUSE)	
10	OVERCOOLING	Products with an overcool protector (optional)
19	POWER PHASE FAILURE	
19	DEHUMIDIFIER FAILURE	

Alarm number	Alarm name	Remarks
19	BUILT-IN VOLTAGE POWER SUPPLY FAILURE	Products with a built-in voltage power supply (optional)
19	EXTERNAL EQUIPMENT FAILURE: 1	Products with an external equipment input terminal (optional)
21	HUMIDIFIER FAILURE	
22	ABS HIGH LIMT: HUM	
23	ABS LOW LIMT: HUM	
26	HUM. DRAIN FAILURE	
26	HUMIDIFIER LEAD OFF WATER SUPPLY	
26	HUMIDIFIER NORMAL WATER SUPPLY	
26	WATER TANK WATER LOW	
26	WATER TANK EMPTY	
26	DRY WICK	
31	STORAGE MEDIUM UNRECOGNIZED (WARNING)	
31	RECORDING DATA DELETED (WARNING)	
31	RECORDING DATA FORMATTED (WARNING)	
31	SYSTEM ERROR	

■ Key protection monitor

Monitor command		Description, monitor command example, response data format, or response example
Main command	Option parameter	
KEYPROTECT?	-	<p><Description> Returns the key protection state.</p> <p><Monitor command example> "KEY PROTECT?"</p> <p><Response format> "key-protection-state"</p> <p><Response example> "ON"</p> <ul style="list-style-type: none"> The "Key-protection-state" of the response is as follows, according to the key protection state. Key protection on "ON" Key protection off "OFF" "Key protection on" refers to the fact that either setting change protection or operation protection is on. (The remote setting protection state cannot be recognized.)

■ Chamber type monitor

Monitor command		Description, monitor command example, response data format, or response example
Main command	Option parameter	
TYPE?	-	<p><Description> Returns the type of sensor connected to the temperature controller, the type of temperature controller, and the set temperature upper limit.</p> <p><Monitor command example> "TYPE?"</p> <p><Response format> "dry-bulb-sensor-type[,wet-bulb-sensor-type], temperature-controller-type, set-temperature-upper-limit"</p> <p><Response example> "T, T, P-310, 160.0"</p> <ul style="list-style-type: none"> • The sensor type is as follows. <ul style="list-style-type: none"> T thermocouple sensor "T" • "Wet-bulb-sensor-type" is omitted for temperature-only chambers. • "Set-temperature-upper-limit" is a valid real number expression to the first decimal place.

■ Operation mode monitor

Monitor command		Description, monitor command example, response data format, or response example																		
Main command	Option parameter																			
MODE?	-	<p><Description> Returns the chamber operation state.</p> <p><Monitor command example> "MODE?"</p> <p><Response format> "operation-state"</p> <p><Response example> "CONSTANT"</p> <ul style="list-style-type: none"> "Operation-state" is as follows, according to the chamber operation state. <table border="0"> <tr> <td>Panel power off</td> <td>"OFF"</td> </tr> <tr> <td>All operation stop</td> <td>"STANDBY"</td> </tr> <tr> <td>Constant operation</td> <td>"CONSTANT"</td> </tr> <tr> <td>Program/remote operation</td> <td>"RUN"</td> </tr> </table> The program/remote operation status refers to the following states: Program operating, program operation pausing, program operation end hold, remote program operating, remote program pausing, remote program end hold 	Panel power off	"OFF"	All operation stop	"STANDBY"	Constant operation	"CONSTANT"	Program/remote operation	"RUN"										
	Panel power off	"OFF"																		
All operation stop	"STANDBY"																			
Constant operation	"CONSTANT"																			
Program/remote operation	"RUN"																			
DETAIL		<p><Description> Returns the (detailed) chamber operation state.</p> <p><Monitor command example> "MODE?, DATAIL"</p> <p><Response format> "operation-state"</p> <p><Response example> "CONSTANT"</p> <ul style="list-style-type: none"> "Operation-state" is as follows, according to the chamber operation state. <table border="0"> <tr> <td>Panel power off</td> <td>"OFF"</td> </tr> <tr> <td>Stopped</td> <td>"STANDBY"</td> </tr> <tr> <td>In constant operation</td> <td>"CONSTANT"</td> </tr> <tr> <td>In program operation</td> <td>"RUN"</td> </tr> <tr> <td>Program paused</td> <td>"RUN PAUSE"</td> </tr> <tr> <td>Hold last program</td> <td>"RUN END HOLD"</td> </tr> <tr> <td>In remote program operation</td> <td>"RMT RUN"</td> </tr> <tr> <td>Remotely paused</td> <td>"RMT RUN PAUSE"</td> </tr> <tr> <td>Remotely holding last program</td> <td>"RMT RUN END HOLD"</td> </tr> </table> 	Panel power off	"OFF"	Stopped	"STANDBY"	In constant operation	"CONSTANT"	In program operation	"RUN"	Program paused	"RUN PAUSE"	Hold last program	"RUN END HOLD"	In remote program operation	"RMT RUN"	Remotely paused	"RMT RUN PAUSE"	Remotely holding last program	"RMT RUN END HOLD"
Panel power off	"OFF"																			
Stopped	"STANDBY"																			
In constant operation	"CONSTANT"																			
In program operation	"RUN"																			
Program paused	"RUN PAUSE"																			
Hold last program	"RUN END HOLD"																			
In remote program operation	"RMT RUN"																			
Remotely paused	"RMT RUN PAUSE"																			
Remotely holding last program	"RMT RUN END HOLD"																			

■ Test area state monitor

Monitor command		Description, monitor command example, response data format, or response example
Main command	Option parameter	
MON?	-	<Description> Returns the chamber test area state.
		<Monitor command example> "MON?"
		<Response format> "measured-temperature, [measured-humidity] ,operation-state, number-of-alarms-occurring"
		<Response example> "23.0, 85, CONSTANT, 0" <ul style="list-style-type: none"> • "Operation-state" has the same response as "MODE?". "Measured-humidity" is omitted for temperature-only chambers. "23.0, , CONSTANT, 0" • "Measured-temperature" is a valid real number expression to the first decimal place. • "Measured-humidity" is an integer expression.
	DETAIL	<Description> Returns the chamber test area state.
		<Monitor command example> "MON?"
		<Response format> "measured-temperature, [measured-humidity] ,operation-state, number-of-alarms-occurring"
		<Response example> "23.0, 85, CONSTANT, 0" <ul style="list-style-type: none"> • "Operation-state" has the same response as "MODE?, DETAIL". • "Measured-humidity" is omitted for temperature-only chambers. • "Measured-temperature" is a valid real number expression to the first decimal place. • "Measured-humidity" is an integer expression.

■ Temperature setting monitor

Monitor command		Description, monitor command example, response data format, or response example
Main command	Option parameter	
TEMP?	-	<Description> Returns the temperature parameter.
		<Monitor command example> "TEMP?"
		<Response format> "measured-temperature ,temperature-set-point , temperature-upper-limit-alarm-value ,temperature-lower-limit-alarm-value"
		<Response example> "23.0, 85.0, 105.0, -45.0" <ul style="list-style-type: none"> • All values are valid real number expressions to the first decimal place. • The current controllable set point is set to the temperature set point. • The current valid alarm values are set as the upper and lower limit alarm values. • When the panel power is off or stopping, the set points for constant setup No.1 and alarm values are set.

■ Humidity setting monitor

Monitor command		Description, monitor command example, response data format, or response example
Main command	Option parameter	
HUMI?	-	<Description> Returns the humidity parameter.
		<Monitor command example> "HUMI?"
		<Response format> "measured-humidity ,humidity-set-point ,humidity-upper-limit-alarm-value , humidity-lower-limit-alarm-value"
		<Response example> "25, 85, 100, 0" <ul style="list-style-type: none"> • All values are integer expressions. • Returns "NA:INVALID REQ" for temperature-only chambers. • The current controllable set point is set to the humidity set point. • When humidity control is disabled, the humidity set point is set to "OFF". • The current valid alarm values are set as the upper and lower limit alarm values. • When the panel power is off or stopping, the set points for constant setup No.1 and alarm values are set.

■ Refrigerator setting monitor

Monitor command		Description, monitor command example, response data format, or response example				
Main command	Option parameter					
SET?	-	<p><Description> Returns the refrigerator set point of the chamber.</p> <p><Monitor command example> "SET?"</p> <p><Response format> "Refrigerator setting"</p> <p><Response example> "REF9" "Refrigerator setting" has the following response, according to the refrigerator set point.</p> <table style="margin-left: 40px;"> <tr> <td>Time is set by manual</td> <td>REF0 to 8</td> </tr> <tr> <td>Auto</td> <td>REF9</td> </tr> </table>	Time is set by manual	REF0 to 8	Auto	REF9
Time is set by manual	REF0 to 8					
Auto	REF9					

■ Refrigerator output monitor

Monitor command		Description, monitor command example, response data format, or response example				
Main command	Option parameter					
REF?	-	<p><Description> Returns the operation state of equipped refrigerators.</p> <p><Monitor command example> "REF?"</p> <p><Response format> "number-of-equipped-refrigerators, operation-state-of-refrigerator-1[, operation-state-of-refrigerator-2]"</p> <p><Response example> "2, ON1, OFF2"</p> <ul style="list-style-type: none"> • The refrigerator "operation-state" has the following response. <table style="margin-left: 40px;"> <tr> <td>Refrigerator operating</td> <td>ONxx</td> </tr> <tr> <td>Refrigerator stopped</td> <td>OFFxx</td> </tr> </table>	Refrigerator operating	ONxx	Refrigerator stopped	OFFxx
Refrigerator operating	ONxx					
Refrigerator stopped	OFFxx					

■ Relay (time signal) monitor

Monitor command		Description, monitor command example, response data format, or response example
Main command	Option parameter	
RELAY?	-	<p><Description> Returns the number of enabled time signals and their numbers.</p> <p><Monitor command example> "RELAY?"</p> <p><Response format> "number-of-enabled-time-signals, [time-signal-number, time-signal-number]..."</p> <p><Response example> "2, 1, 2"</p>

■ Heater output monitor

Monitor command		Description, monitor command example, response data format, or response example
Main command	Option parameter	
%?	-	<p><Description> Returns the number of controllable heaters and their heater output values.</p> <p><Monitor command example> "%?"</p> <p><Response format> "number-of-heaters, heater-output-value[,humidifying-heater-output-value]"</p> <p><Response example> "2, 56.2, 19.3"</p> <ul style="list-style-type: none"> • "Humidifying-heater-output-value" is omitted for temperature-only chambers. • "Heater-output-value" is a valid real number expression to the first decimal place.

■ Constant monitor

Monitor command		Description, monitor command example, response data format, or response example
Main command	Option parameter	
CONSTANT SET?	TEMP	<Description> Returns the temperature set point in constant setup (No.1).
		<Monitor command example> "CONSTANT SET?,TEMP"
		<Response format> "temperature-set-point,control-permission"
		<Response example> "100.0, ON" <ul style="list-style-type: none"> • "Temperature-set-point" is a valid real number expression to the first decimal place. • "Control-permission" is always "ON".
	HUMI	<Description> Returns the humidity set point in constant setup (No.1).
		<Monitor command example> "CONSTANT SET?,HUMI"
		<Response format> "humidity-set-point,control-permission"
		<Response example> "85, ON" <ul style="list-style-type: none"> • "Humidity-set-point" is an integer expression. • "Control-permission" has the following response. Humidity control on: "ON" Humidity control off: "OFF"

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Monitor command		Description, monitor command example, response data format, or response example
Main command	Option parameter	
CONSTANT SET?	REF	<Description> Returns the refrigerator setting in constant setup (No.1).
		<Monitor command example> "CONSTANT SET?,REF"
		<Response format> "Refrigerator setting"
		<Response example> "AUTO" <ul style="list-style-type: none"> The refrigerator setting varies depending on the number of equipped refrigerators and the auto/manual settings. Auto setting: "AUTO" Manual setting: "OFF", "20", "50", "100"
	RELAY	<Description> Returns the time signal set point in constant setup (No.1).
		<Monitor command example> "CONSTANT SET?,RELAY"
		<Response format> "number-of-enabled-time-signals, [time-signal-number], [time-signal-number], [time-signal-number]..."
		<Response example> "2, 1, 2"
	PTC	<Description> Returns the specimen temperature control set point in constant setup (No.1).
		<Monitor command example> "CONSTANT SET?,PTC"
		<Response format> "specimen-temperature-control-permission,upper-deviation-for-specimen-temperature-control,lower-deviation-for-specimen-temperature-control"
		<Response example> "ON, 20.0, -20.0" <ul style="list-style-type: none"> The specimen temperature control permission has the following response. Specimen temperature control enabled: "ON" Specimen temperature control disabled: "OFF" "Upper-deviation-for-specimen-temperature-control" and "Lower-deviation-for-specimen-temperature-control" are valid real number expressions to the first decimal place. When specimen temperature control option is not equipped, "NA:INVALID REQ" is returned.

■ Program execution monitor

Monitor command		Description, monitor command example, response data format, or response example
Main command	Option parameter	
PRGM MON?	-	<p><Description> Returns the operation state parameter when a program is operating.</p> <p><Monitor command example> "PRGM MON?"</p> <p><Response format> "program-number-being-executed, step-number-being-executed, temperature-set-point [, humidity-set-point], step-remaining-time, remaining-counter-A, remaining-counter-B"</p> <p><Response example> "1, 2, 27.0, 85, 0:58, 1, 2"</p> <ul style="list-style-type: none"> • When a program is not operating, "NA:CHB NOT READY" is returned. • Remote program operation is an exception to this monitor command. To monitor the remote program operation state, see "Remote program operation state monitor". • The current control set points are set to the temperature and humidity set points. (When humidity control is disabled, "OFF" is set.) • "Humidity-set-point" is omitted for temperature-only chambers. • When the temperature (humidity) control-permission is set to OFF, the following response is returned. "program-number-being-executed, step-number-being-executed, OFF[, OFF], remaining-time"

■ Program assign monitor

Monitor command		Description, monitor command example, response data format, or response example
Main command	Option parameter	
PRGM SET?	-	<p><Description> Returns the program area, program pattern name, and end setting of the program operation being executed.</p> <p><Monitor command example> "PRGM SET?"</p> <p><Response format> "program-area, program-pattern-name, end-condition"</p> <p><Response example> "RAM:1, SAMPLE-1, END(OFF)"</p> <ul style="list-style-type: none"> • When a program is not operating, "NA:CHB NOT READY" is returned. (Remote program operation is an exception to this monitor command.) • "Program-area" has the following response. RAM:xx (xx is the pattern number during operation.) • "End-condition" has the following description, according to the end condition of the program data. <ul style="list-style-type: none"> When panel power is off after the program ends: "END(OFF)" When operation stops after the program ends: "END(STANDBY)" When constant operation starts after the program ends: "END(CONSTANT)" When the final step is retained after the program ends: "END(HOLD)" When program operation starts after the program ends: "END(RUN)"

■ Program pattern usage monitor

Monitor command		Description, monitor command example, response data format, or response example
Main command	Option parameter	
PRGM USE?	RAM	<Description> Returns the program pattern information with set data.
		<Monitor command example> "PRGM USE?, RAM"
		<Response format> "number-of-program-patterns [pattern-number] [pattern-number]..."
		<Response example> "5, 1, 2, 10, 15, 17"
	RAM: Pattern number	<Description> Returns the pattern number of the specified program pattern and the write date.
		<Monitor command example> "PRGM USE?, RAM:1"
		<Response format> "pattern-name ,write-date"
		<Response example> "SAMPLE-1, 12. 03/04 " <ul style="list-style-type: none"> • The specified range of the pattern number is a value between 1 and 40. • Returns "NA:DATA NOT READY" when program data is not set.

■ Program data monitor

Monitor command		Description, monitor command example, response data format, or response example										
Main command	Option parameter											
PRGM DATA?	RAM: Pattern number or PGM Pattern number	<Description> Returns the details of the specified program pattern.										
		<Monitor command example> "PRGM DATA?, RAM:1"										
		<Response format> "number-of-steps, pattern-name, counter-A-setting, counter-B-setting, end-condition"										
		<Response example> "5, <PGM-1>, COUNT, A(1. 3. 10), B(0. 0. 0), END(OFF)" <ul style="list-style-type: none"> • Remote program operation is an exception to this monitor command. • Returns "NA:DATA NOT READY" when data is not set. • The specified range of the pattern number is a value between 1 and 40. • "Pattern-name" is expressed with angle brackets (<>) added. • "Counter-A" and "counter-B" are expressed as follows. COUNT, A(1. 3. 10) <table style="margin-left: 40px; border-collapse: collapse;"> <tr> <td style="border-left: 1px solid black; border-bottom: 1px solid black; width: 20px; height: 10px;"></td> <td style="border-left: 1px solid black; border-bottom: 1px solid black; width: 20px; height: 10px;"></td> <td style="border-left: 1px solid black; border-bottom: 1px solid black; width: 20px; height: 10px;"></td> <td style="padding-left: 10px;">Number of repeat cycles</td> </tr> <tr> <td style="border-left: 1px solid black; border-bottom: 1px solid black; width: 20px; height: 10px;"></td> <td style="border-left: 1px solid black; border-bottom: 1px solid black; width: 20px; height: 10px;"></td> <td style="border-left: 1px solid black; border-bottom: 1px solid black; width: 20px; height: 10px;"></td> <td style="padding-left: 10px;">Repeating end step number</td> </tr> <tr> <td style="border-left: 1px solid black; border-bottom: 1px solid black; width: 20px; height: 10px;"></td> <td style="border-left: 1px solid black; border-bottom: 1px solid black; width: 20px; height: 10px;"></td> <td style="border-left: 1px solid black; border-bottom: 1px solid black; width: 20px; height: 10px;"></td> <td style="padding-left: 10px;">Repeating start step number</td> </tr> </table> • "End-condition" has the following description, according to the end condition of the program data. <ul style="list-style-type: none"> When panel power is off after the program ends: "END(OFF)" When operation stops after the program ends: "END(STANDBY)" When constant operation starts after the program ends: "END(CONSTANT)" When the final step is retained after the program ends: "END(HOLD)" When program operation starts after the program ends: "END(RUN: pattern number)" 				Number of repeat cycles				Repeating end step number		
			Number of repeat cycles									
			Repeating end step number									
			Repeating start step number									

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Monitor command		Description, monitor command example, response data format, or response example
Main command	Option parameter	
PRGM DATA?	RAM: Pattern number, STEPxx or PGM Pattern number STEPxx	<Description> Returns the information of the specified step data.
		<Monitor command example> "PRGM DATA?, RAM:1, STEP1"
		<Response format> "step-number, temperature-set-point, temperature-gradient [,humidity-set-point, humidity-gradient], time-setting, exposure-setting, refrigerator-setting[, time-signal-setting], paused-setting "
		<Response example> "5, TEMP23.0, TEMP RAMP ON, HUMI50, HUMI RAMP OFF, TIME99:59, GRANTY ON, REF9, RELAY ON1.2, PAUSE OFF" <ul style="list-style-type: none"> • Remote program operation is an exception to this monitor command. • To monitor the setting data of the remote program operation, see "Remote program data monitor". • Returns "NA:DATA NOT READY" when data is not set. • The specified range of the pattern number is a value between 1 and 40. • "Humidity-set-point" and "humidity-gradient" are omitted for temperature-only chambers. • When humidity control is disabled, "humidity-set-point" is set to "OFF". • "Refrigerator-setting" has the same response as "SET?". • "Time-signal-setting" is omitted when there is no time signal set to "ON". • When the temperature (humidity) control-permission is set to OFF, the following response is returned. "step-number, time-setting"

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Monitor command		Description, monitor command example, response data format, or response example
Main command	Option parameter	
PRGM DATA?	RAM: Pattern number, DETAIL or PGM Pattern number DETAIL	<Description> Returns the step information of the specified program pattern.
		<Monitor command example> "PRGM DATA?, RAM:1, DETAIL"
		<Response format> "temperature-warning-upper-limit-absolute-value, temperature-warning-lower-limit-absolute-value [,humidity -warning-upper-limit-absolute-value] [,humidity -warning-lower-limit-absolute-value] temperature-start-setting [, start-temperature-setting] [, humidity-start-setting] [, start-humidity-setting]"
		<Response example> "90.0, -10.0, 100, TEMPSV, 80.0, 50" <ul style="list-style-type: none"> • Remote program operation is an exception to this monitor command. • Returns "NA:DATA NOT READY" when program data is not set. • The specified range of the pattern number is a value between 1 and 40. • "Temperature-start-setting" is set as follows. When the temperature start setting is disabled: "TEMPOFF" When the temperature start setting is a measured value: "TEMPPV" When the temperature start setting is a set value: "TEMPSV" • "Humidity-start-setting" is set as follows. When the humidity start setting is disabled: "HUMIOFF" When the humidity start setting is a measured value: "HUMIPV" When the humidity start setting is a set value: "HUMISV" • "Temperature-warning-upper-limit-absolute-value" and "temperature-warning-lower-limit-absolute-value" are real number expressions. • "Humidity-warning-upper-limit-absolute-value" and "humidity-warning-lower-limit-absolute-value" are integer expressions. (These are omitted for temperature-only chambers.) • The temperature set point of the temperature start setting is set with the same format as the temperature set point. (This is omitted when the temperature start setting is "TEMPOFF" or "TEMPPV".) • The humidity set point of the humidity start setting is set with the same format as the humidity set point. (This is omitted when the humidity start setting is "HUMIOFF" or "HUMIPV".)

■ On-board specimen temperature information monitor

Monitor command		Description, monitor command example, response data format, or response example
Main command	Option parameter	
SYSTEM SET?	PTC	<Description> Returns the on-board specimen temperature information.
		<Monitor command example> "SYSTEM SET?, PTC"
		<Response format> "On-board-information"
		<Response example> "ON" <ul style="list-style-type: none"> • "On-board-information" has the following response. When equipped with a specimen temperature control function: "ON" When not equipped with a specimen temperature control function: "OFF"

■ Test area state monitor (including specimen temperature information)

Monitor command		Description, monitor command example, response data format, or response example
Main command	Option parameter	
MON PTC?	-	<Description> Returns the chamber test area state (including specimen temperature control).
		<Monitor command example> "MON PTC?"
		<Response format> "specimen-temperature, measured-temperature, [measured-humidity] ,operation-state, alarm-number"
		<Response example> "20.0, 23.0, 85, CONSTANT, 0" <ul style="list-style-type: none"> • "Operation-state" has the same response as "MODE?". • "Measured-humidity" is omitted for temperature-only chambers. • "Specimen-temperature" and "measured-temperature" are valid real number expressions to the first decimal place. • "Measured-humidity" is an integer expression. • When specimen temperature control option is not equipped, "NA:INVALID REQ" is returned.

■ Operating specimen temperature control monitor

Monitor command		Description, monitor command example, response data format, or response example
Main command	Option parameter	
SET PTC?	-	<p><Description> Returns the specimen temperature control state.</p> <p><Monitor command example> "SET PTC?"</p> <p><Response format> "specimen-temperature-control-status,upper-deviation-for-specimen-temperature-control,lower-deviation-for-specimen-temperature-control"</p> <p><Response example> "ON, 20.0, -20.0"</p> <ul style="list-style-type: none"> • The specimen temperature control status has the following response. Specimen temperature control enabled: "ON" Specimen temperature control disabled: "OFF" • "Upper-deviation-for-specimen-temperature-control" and "lower-deviation-for-specimen-temperature-control" are valid real number expressions to the first decimal place. • If the chamber is not in the operating status, the response is as follows. "OFF, OFF, OFF" • When the chamber is operating but specimen temperature control is disabled, the response is as follows. "OFF, upper-deviation-for-specimen-temperature-control, lower-deviation-for-specimen-temperature-control" • When the chamber is operating and specimen temperature control is enabled, the response is as follows. "ON, upper-deviation-for-specimen-temperature-control, lower-deviation-for-specimen-temperature-control" • When specimen temperature control option is not equipped, "NA:INVALID REQ" is returned.

■ Specimen temperature control parameter monitor

Monitor command		Description, monitor command example, response data format, or response example
Main command	Option parameter	
PTC?	-	<Description> Returns the setting parameter related to specimen temperature control.
		<Monitor command example> "PTC?"
		<Response format> "upper-limit, lower-limit, P-parameter, filter-value, I-parameter, option-setting-1, option-setting-2"
		<Response example> "150.0, -40.0, 1.0, 36.0, 2.0, 0.0, 0.0" <ul style="list-style-type: none"> • Each parameter is a valid real number expression to the first decimal place. • "Option-setting-1" and "option-setting-2" are unused. • When specimen temperature control option is not equipped, "NA:INVALID REQ" is returned.

■ Specimen temperature monitor

Monitor command		Description, monitor command example, response data format, or response example
Main command	Option parameter	
TEMP PTC?	-	<p><Description> Returns the parameter related to specimen temperature control.</p> <p><Monitor command example> "TEMP PTC?"</p> <p><Response format> "specimen-temperature-control-status, specimen-temperature, internal-chamber-temperature, set-temperature, test-area-set-temperature, maximum-deviation, minimum-deviation"</p> <p><Response example> "ON, 27.7, 26.5, 30.0, 45.6, 20.0, 20.0"</p> <ul style="list-style-type: none"> The specimen temperature control status has the following response. Specimen temperature control enabled: "ON" Specimen temperature control disabled: "OFF" "Specimen-temperature", "internal-chamber-temperature", "set-temperature", "test-area-set-temperature", "maximum-deviation", and "minimum-deviation" are valid real number expressions to the first decimal place. If the chamber is not in the operating status, the response is as follows. "OFF, specimen-temperature, internal-chamber-temperature, OFF, OFF, OFF, OFF" When the chamber is operating but specimen temperature control is disabled, the response is as follows. "OFF, specimen-temperature, internal-chamber-temperature, set-temperature, OFF, maximum-deviation, minimum-deviation" When the chamber is operating and specimen temperature control is enabled but the setting is disabled, the response is as follows. "ON, specimen-temperature, internal-chamber-temperature, 999.9, 999.9, maximum-deviation-for-specimen-temperature-control, minimum-deviation-for-specimen-temperature-control" When specimen temperature control is disabled, an error message is returned. Error message: "NA: INVALID REQ"

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■ Program pattern data monitor (including specimen temperature information)

Monitor command		Description, monitor command example, response data format, or response example
Main command	Option parameter	
PRGM DATA PTC?	RAM: Pattern number	<Description> Returns the details of the specified program pattern (including specimen temperature control information).
		<Monitor command example> "PRGM DATA PTC?, RAM:1"
		<Response format> "number-of-steps, pattern-name, counter-A-setting, counter-B-setting, end-condition"
		<Response example> "5, <PGM-1>, COUNT, A(0. 0. 0), B(0. 0. 0), END(OFF)" <ul style="list-style-type: none"> • Remote program operation is an exception to this monitor command. • Returns "NA:DATA NOT READY" when data is not set. • The specified range of the pattern number is a value between 1 and 40. • "Pattern-name" is expressed with angle brackets (<>) added. • "Counter-A" and "counter-B" are expressed as follows. COUNT, A(x. x. x) <div style="margin-left: 40px;"> </div> • "End-condition" has the following description. When panel power is off after the program ends: "END(OFF)" When operation stops after the program ends: "END(STANDBY)" When constant operation starts after the program ends: "END(CONSTANT)" When program operation starts after the program ends: "END(RUN: pattern number)" When the final settings are retained after the program ends: "END(HOLD)" • When specimen temperature control option is not equipped, "NA:INVALID REQ" is returned.

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Monitor command		Description, monitor command example, response data format, or response example
Main command	Option parameter	
PRGM DATA PTC?	RAM: Pattern number, STEPxx	<Description> Returns the step information of the specified program pattern.
		<Monitor command example> "PRGM DATA PTC?, RAM:1, STEP1"
		<Response format> "step-number, temperature-set-point, temperature-gradient, specimen-temperature-control-status [, humidity-set-point, humidity-gradient], time-setting, exposure-setting, refrigerator-setting [, time-signal-setting], paused-setting, upper-deviation-for-specimen-temperature-control, lower-deviation-for-specimen-temperature-control"
		<Response example> "5, TEMP23.0, TEMP RAMP ON, PTC ON, HUMI50, HUMI RAMP OFF, TIME99:59, GRANTY ON, REF9, RELAY ON1.2, PAUSE OFF, DEVP10.0, DEVN -10.0" <ul style="list-style-type: none"> • Remote program operation is an exception to this monitor command. • Returns "NA:DATA NOT READY" when data is not set. • The specified range of the pattern number is a value between 1 and 40. • The specimen temperature control status has the following response. Specimen temperature control enabled: "ON" Specimen temperature control disabled: "OFF" • "Humidity-set-point" and "humidity-gradient" are omitted for temperature-only chambers. • When humidity control is disabled, "humidity-set-point" is set to "OFF". • "Time-signal-setting" is omitted when there is no time signal set to "ON". • When paused, "PAUSE ON" is displayed, and when disabled, "PAUSE OFF" is displayed. • When the temperature (humidity) control-permission is set to OFF, the following response is returned. "step-number, time-setting"

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Monitor command		Description, monitor command example, response data format, or response example
Main command	Option parameter	
PRGM DATA PTC?	RAM:	<Description> Returns the step information of the specified program pattern.
	Pattern number, DETAIL	<Monitor command example> "PRGM DATA PTC?, RAM:1, DETAIL" <Response format> "temperature-warning-upper-limit-absolute-value, temperature-warning-lower-limit-absolute-value [, temperature-warning-upper-limit-absolute-value] [, temperature-warning-lower-limit-absolute-value] temperature-start-setting [, start-temperature-setting] [, humidity-start-setting] [, start-humidity-setting]" <Response example> "90.0, -10.0, 100, TEMPSV, 80.0, 50" <ul style="list-style-type: none"> • Remote program operation is an exception to this monitor command. • Returns "NA:DATA NOT READY" when program data is not set. • The specified range of the pattern number is a value between 1 and 40. • "Temperature-start-setting" is set as follows. When the temperature start setting is disabled: "TEMPOFF" When the temperature start setting is a measured value: "TEMPPV" When the temperature start setting is a set value: "TEMPSV" • "Humidity-start-setting" is set as follows. When the humidity start setting is disabled: "HUMIOFF" When the humidity start setting is a measured value: "HUMIPV" When the humidity start setting is a set value: "HUMISV" • "Temperature-warning-upper-limit-absolute-value" and "temperature-warning-lower-limit-absolute-value" are real number expressions. • "Humidity-warning-upper-limit-absolute-value" and "humidity-warning-lower-limit-absolute-value" are integer expressions. (These are omitted for temperature-only chambers.) • The temperature set point of the temperature start setting is set with the same format as the temperature set point. (This is omitted when the temperature start setting is "TEMPOFF" or "TEMPPV".) • The humidity set point of the humidity start setting is set with the same format as the humidity set point. (This is omitted when the humidity start setting is "HUMIOFF" or "HUMIPV".)

■ Remote program operation state monitor

Monitor command		Description, monitor command example, response data format, or response example
Main command	Option parameter	
RUN PRGM MON?	-	<p><Description> Returns the operation state of the remote program operation being executed.</p> <p><Monitor command example> "RUN PRGM MON?"</p> <p><Response format> "data-count, set-temperature [,set-humidity], remaining-time, remaining-repeat-cycles"</p> <p><Response example> "4, 35.9, 85, 1:00, 1"</p> <ul style="list-style-type: none"> • When a remote program is not operating, "NA:CHB NOT READY" is returned. • Program operation is an exception to this monitor command. To monitor the program operation state See "Program execution monitor". • "Set-temperature" is a valid real number expression to the first decimal place. • "Set-humidity" is an integer expression. • "Set-humidity" is omitted for temperature-only chambers. • When humidity control is disabled, "humidity-set-point" is set to "OFF". • "Remaining-repeat-cycles" is currently not used. ("1" is set as a dummy value.)

■ Remote program data monitor

Monitor command		Description, monitor command example, response data format, or response example
Main command	Option parameter	
RUN PRGM?	-	<Description> Returns the setting data of the remote program operation being executed.
		<Monitor command example> "RUN PRGM?"
		<Response format> "start-temperature-setting endpoint-temperature-setting [start-humidity-setting endpoint-humidity-setting] time-setting refrigerator-setting [time-signal-setting]"
		<Response example> "TEMP10.0 GOTEMP30.0 HUMI10 GOHUMI100 TIME1:00 REF9 RELAYON,1,2" <ul style="list-style-type: none"> • When a remote program is not operating, the setting of the previously performed remote program operation is returned. • Program operation is an exception to this monitor command. To monitor the setting data of the program operation, see "Program data monitor". • "Start-temperature-setting" and "endpoint-temperature-setting" are valid real number expressions to the first decimal place. • "Start-humidity-setting" and "endpoint-humidity-setting" are integer expressions. • "Time-setting" is in the format "hour:minute" (variable length). • "Start-humidity-setting" and "endpoint-humidity-setting" are omitted for temperature-only chambers. • When humidity control is disabled, "humidity-set-point" is set to "OFF". • "Refrigerator-setting" has the same response as "SET?". • "Time-signal-setting" is omitted when there is no time signal set to "ON".

3.3 Setting command details

Setting commands have the following format.

`main-command[,option-parameter] ,setting-data`

- In the description, spaces and quotation marks (") are used to highlight certain areas. For details about the usable characters, see "1.3 Data handled by the network".
- Some commands may not be accepted depending on the chamber. See "Table 3.12 Reception state list".
- In constant operation only constant setup No.1 is specified.

■ Date setting

Setting command			Description, data transmission format, setting command example
Main command	Option parameter	Transmission data	
DATE	-	Date data	<p><Description> Sets the date.</p> <p><Transmission data format> "Year.Month/Day"</p> <p><Setting command example> "DATE, 12. 03/04"</p> <ul style="list-style-type: none"> • Enter 07 to 37 for the year. • You can also use the old specification method of entering single-digit numerical values. • The command is accepted even when ".Day" of the old specification is added. (The day specification is ignored.) • When the chamber is in the following states, "NA:CHB NOT READY" is returned. <ul style="list-style-type: none"> Program operating (including pausing and hold) Timer set Recording sampling log External memory recording in progress

■ Time setting

Setting command			Description, data transmission format, setting command example
Main command	Option parameter	Transmission data	
TIME	-	Time data	<p><Description> Sets the time.</p> <p><Transmission data format> "Hour:Minute:Second"</p> <p><Setting command example> "TIME, 18:00:00"</p> <ul style="list-style-type: none"> • The time is expressed in 24-hour format. • When the chamber is in the following states, "NA:CHB NOT READY" is returned. <ul style="list-style-type: none"> Program operating (including pausing and hold) Timer set Recording sampling log External memory recording in progress

■ Interrupt mask setting

Setting command			Description, data transmission format, setting command example
Main command	Option parameter	Transmission data	
MASK	-	Mask data	<Description> This command sets the interrupt mask.
			<Transmission data format> "SRQ1 SRQ2 SRQ3 SRQ4 SRQ5 SRQ6 SRQ7 SRQ8" SRQ1: Not connected SRQ2: When an alarm occurs on the chamber, 1 is set. SRQ3: When a single-step operation ends in remote program operation, 1 is set. SRQ4: When the state transitions from power off to operation, or vice versa, 1 is set. SRQ5: Not connected SRQ6: Not connected SRQ7: Reserved with the SRQ function for GPIB communication SRQ8: Not connected
			<Setting command example> "MASK, 01000000" <ul style="list-style-type: none"> By using this command to set an interrupt mask, the SRQ status is set when an event is allocated to the above SRQ, thereby enabling confirmation of an event with the "SRQ?" monitor command. (When using the GPIB network, an SRQ interrupt is generated.) Setting this to "1" allows setting to the SRQ status.

■ SRQ status setting

Setting command			Description, data transmission format, setting command example
Main command	Option parameter	Transmission data	
SRQ	-	Resetting command	<Description> This command clears the SRQ status.
			<Transmission data format> "Reset command"
			<Setting command example> "SRQ, RESET"

■ Timer writing

Setting command			Description, data transmission format, setting command example
Main command	Option parameter	Transmission data	
TIMER WRITE	NO0	Timer Data	<Description> Edits the quick timer.
			<Transmission data format> "start-time, operation-mode" or "start-time, stop-mode"
			<Setting command example> "TIMER WRITE, NO0, 10:00, CONSTANT" <ul style="list-style-type: none"> • Use "start-time" to set the time in "hour:minutes" format until the timer starts after the timer is set to "ON". • Set the time from 0:01 to 9999:59. • For details about operation mode and stop mode, see Table 3.8 and Table 3.9. • When the quick timer is set, "NA:CHB NOT READY" is returned.
	NO1	Timer Data	<Description> Edits the start timer.
			<Transmission data format> "start-mode, operation-mode"
			<Setting command example> "TIMER WRITE, NO1, MODE1, 12.03/04, 10:00, CONSTANT" <ul style="list-style-type: none"> • For details about start mode and operation mode, see Table 3.7 and Table 3.8. • When the start timer is set, "NA:CHB NOT READY" is returned.
	NO2	Timer Data	<Description> Edits the end timer.
			<Transmission data format> "start-mode, stop-mode"
			<Setting command example> "TIMER WRITE, NO2, MODE2, SAT, 10:00, OFF" <ul style="list-style-type: none"> • For details about start mode and stop mode, see Table 3.7 and Table 3.9. • When the end timer is set, "NA:CHB NOT READY" is returned.

Table 3.7 Start mode details2

Setting	Transmission data format	Input example
First execution mode	"MODE1,start-date,start-time"	"MODE1,12.03/04,10:00"
Weekly execution mode	"MODE2,start-day,start-time"	"MODE2,SAT,23:00"
Daily execution mode	"MODE3,start-time"	"MODE3,0:00"

The start days are expressed as follows.

Monday: "MON"

Tuesday: "TUE"

Wednesday: "WED"

Thursday: "THU"

Friday: "FRI"

Saturday: "SAT"

Sunday: "SUN"

Multiple start days can be specified.

To specify multiple days, use slashes (/).

"MODE2,MON/SAT,10:00"

Table 3.8 Operation mode details

Setting	Transmission data format	Input example
Program operation	"RUN, RAM: pattern-number, STEPxx"	"RUN, RAM:1,STEP1"
Constant operation (No.1)	"CONSTANT"	"CONSTANT"

The specified range of the pattern number is a value between 1 and 40.

Table 3.9 Stop mode details

Setting	Transmission data format	Input example
All operation stop	"STANDBY"	"STANDBY"
Power off	"OFF"	"OFF"

■ Timer deletion

Setting command			Description, data transmission format, setting command example
Main command	Option parameter	Transmission data	
TIMER ERASE	NO0 NO1 NO2	-	<p><Description> Deletes the specified timer setting.</p> <p><Transmission data format> -</p> <p><Setting command example> "TIMER ERASE, NO1"</p> <ul style="list-style-type: none"> • When there is no setting data in the specified timer, "NA:DATA NOT READY" is returned.

■ Valid timer setting

Setting command			Description, data transmission format, setting command example
Main command	Option parameter	Transmission data	
TIMER	ON	Timer number	<p><Description> Enables the specified timer.</p> <p><Transmission data format> "timer-number"</p> <p><Setting command example> "TIMER, ON, 1"</p> <ul style="list-style-type: none"> • Enter 0 to 2 for the timer number. <ul style="list-style-type: none"> 0: Quick timer 1: Start timer 2: End timer • When there is no setting data in the specified timer, "NA:DATA NOT READY" is returned. • When the specified timer is set to "ON", "NA:CHB NOT READY" is returned.
	OFF	Timer number	<p><Description> Disables the specified timer.</p> <p><Transmission data format> "timer-number"</p> <p><Setting command example> "TIMER, OFF, 2"</p> <ul style="list-style-type: none"> • Enter 0 to 2 for the timer number. <ul style="list-style-type: none"> 0: Quick timer 1: Start timer 2: End timer • When there is no setting data in the specified timer, "NA:DATA NOT READY" is returned.

■ Key protection setting

Setting command			Description, data transmission format, setting command example
Main command	Option parameter	Transmission data	
KEYPROTECT	-	ON	<p><Description> Enables setting change protection and operation protection at the same time.</p> <p><Transmission data format> "ON"</p> <p><Setting command example> "KEYPROTECT, ON"</p> <ul style="list-style-type: none"> • When the panel power is off, "NA:CHB NOT READY" is returned. • Setting change protection and operation protection cannot be set separately. • Remote setting protection cannot be operated through communication.
	-	OFF	<p><Description> Disables setting change protection and operation protection at the same time.</p> <p><Transmission data format> "OFF"</p> <p><Setting command example> "KEYPROTECT, OFF"</p> <ul style="list-style-type: none"> • When the panel power is off, "NA:CHB NOT READY" is returned. • Setting change protection and operation protection cannot be set separately. • Remote setting protection cannot be operated through communication.

■ Power ON/OFF

Setting command			Description, data transmission format, setting command example
Main command	Option parameter	Transmission data	
POWER	-	ON	<Description> Turns on the panel power and starts constant operation (No.1).
			<Transmission data format> "ON"
			<Setting command example> "POWER, ON"
	-	OFF	<Description> Stops operation and turns off the panel power.
<Transmission data format> "OFF"			
<Setting command example> "POWER, OFF"			

■ Temperature-related settings

Setting command			Description, data transmission format, setting command example
Main command	Option parameter	Transmission data	
TEMP	-	S set point	<p><Description> Changes the temperature set point in constant setup (No.1).</p> <p><Transmission data format> "S-set-point"</p> <p><Setting command example> "TEMP, S23.0"</p> <ul style="list-style-type: none"> • Enter a value from the temperature lower limit alarm value to the temperature upper limit alarm value. • The value is a valid number to the first decimal place. (All other digits are ignored.)
		H set point	<p><Description> Changes the temperature upper absolute alarm value in constant setup (No.1).</p> <p><Transmission data format> "H-set-point"</p> <p><Setting command example> "TEMP, H100.0"</p> <ul style="list-style-type: none"> • Enter a value from the temperature set point in constant setup (No.1) to the set temperature upper limit. • The value is a valid number to the first decimal place. (All other digits are ignored.)
		L set point	<p><Description> Changes the temperature lower absolute alarm value in constant setup (No.1).</p> <p><Transmission data format> "L-set-point"</p> <p><Setting command example> "TEMP, L-40.0"</p> <ul style="list-style-type: none"> • Enter a value from the set temperature lower limit to the temperature set point in constant setup (No.1). • The value is a valid number to the first decimal place. (All other digits are ignored.)
	-	S set point H set point L set point	<p><Description> Changes the temperature set point in constant setup (No.1), temperature upper limit absolute alarm value, and temperature lower limit absolute alarm value together.</p> <p><Transmission data format> "S-set-point H-set-point L-set-point"</p> <p><Setting command example> "TEMP, S23.0 H100.0 L-40.0"</p>

■ Humidity-related settings

Setting command			Description, data transmission format, setting command example
Main command	Option parameter	Transmission data	
HUMI	-	S set point	<Description> Changes the humidity set point in constant setup (No.1).
			<Transmission data format> "S-set-point"
			<Setting command example> "HUMI, S85" <ul style="list-style-type: none"> • Returns "NA:INVALID REQ" for temperature-only chambers. • Enter a value between the humidity lower limit alarm value and the humidity upper limit alarm value. • This value is treated as an integer value. (Digits after the decimal place are ignored.) • To disable humidity control, describe this as "HUMI,SOFF".
-	H set point	<Description> Changes the humidity upper limit absolute alarm value in constant setup (No.1).	
		<Transmission data format> "H-set-point"	
		<Setting command example> "HUMI, H100" <ul style="list-style-type: none"> • Returns "NA:INVALID REQ" for temperature-only chambers. • Enter a value between the humidity set point in constant setup (No.1) and the set humidity upper limit. • This value is treated as an integer value. (Digits after the decimal place are ignored.) 	
-	L set point	<Description> Changes the humidity lower limit absolute alarm value in constant setup (No.1).	
		<Transmission data format> "L-set-point"	
		<Setting command example> "HUMI, L0" <ul style="list-style-type: none"> • Returns "NA:INVALID REQ" for temperature-only chambers. • Enter a value between the set humidity lower limit and the humidity set point in constant setup (No.1). • This value is treated as an integer value. (Digits after the decimal place are ignored.) 	

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Setting command			Description, data transmission format, setting command example
Main command	Option parameter	Transmission data	
HUMI	-	S set point H set point L set point	<Description> Changes the humidity set point in constant setup (No.1), humidity upper limit absolute alarm value, and humidity lower limit absolute alarm value together.
			<Transmission data format> "S-set-point H-set-point L-set-point"
			<Setting command example> "HUMI, S23 H100 L0" <ul style="list-style-type: none"> Returns "NA:INVALID REQ" for temperature-only chambers.

■ Refrigerator-related settings

Setting command			Description, data transmission format, setting command example
Main command	Option parameter	Transmission data	
SET	-	Set point	<Description> Changes the refrigerator set point in constant setup (No.1).
			<Transmission data format> "REF-set-point"
			<Setting command example> "SET, REF9" <ul style="list-style-type: none"> Enter 0 to 9 for the set point. <ul style="list-style-type: none"> Set point 0: Manual OFF Set point 1 to 2: Manual 20% Set point 3 to 5: Manual 50% Set point 6 to 8: Manual 100%

■ Relay (time signal) setting

Setting command			Description, data transmission format, setting command example
Main command	Option parameter	Transmission data	
RELAY	ON	Relay number	<p><Description> Enables the time signal set point in constant setup (No.1).</p> <p><Transmission data format> "time-signal-number [,time-signal-number][,time-signal-number]..."</p> <p><Setting command example> "RELAY, ON, 1, 2"</p> <ul style="list-style-type: none"> • Returns "NA:INVALID REQ" if time signal 1 is specified when the external output is not set to time signal 1. • Returns "NA:INVALID REQ" if a number of a chamber not equipped with the time signal is specified. <p>(Time signals 3 to 8 are optional.)</p>
	OFF	Relay number	<p><Description> Disables the time signal set point in constant setup (No.1).</p> <p><Transmission data format> "time-signal-number [,time-signal-number][,time-signal-number]..."</p> <p><Setting command example> "RELAY, OFF, 1, 2"</p> <ul style="list-style-type: none"> • Returns "NA:INVALID REQ" if time signal 1 is specified when the external output is not set to time signal 1. • Returns "NA:INVALID REQ" if a number of a chamber not equipped with the time signal is specified. <p>(Time signals 3 to 8 are optional.)</p>

■ Program operation control

Setting command			Description, data transmission format, setting command example
Main command	Option parameter	Transmission data	
PRGM	RUN	RAM: pattern-number, STEPxx	<p><Description> Starts the specified program pattern.</p> <p><Transmission data format> "RAM: pattern-number, STEPxx"</p> <p><Setting command example> "PRGM, RUN, RAM:1, STEP1 "</p> <ul style="list-style-type: none"> • The specified range of the pattern number is a value between 1 and 40. • Returns "NA:DATA NOT READY" when the specified pattern is not available. • Returns "NA:DATA NOT READY" when the specified step is not available.
	PAUSE	-	<p><Description> Pauses the program operation that is operating.</p> <p><Transmission data format> -</p> <p><Setting command example> "PRGM, PAUSE"</p> <ul style="list-style-type: none"> • When a program is not operating (including remote program operation), "NA:CHB NOT READY" is returned. • When a program is paused, "NA:CHB NOT READY" is returned. • When program operation holds, "NA:CHB NOT READY" is returned.
	CONTINUE	-	<p><Description> Restarts the paused program operation.</p> <p><Transmission data format> -</p> <p><Setting command example> "PRGM, CONTINUE"</p> <ul style="list-style-type: none"> • When a program is not paused (including remote program operation), "NA:CHB NOT READY" is returned.

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Setting command			Description, data transmission format, setting command example
Main command	Option parameter	Transmission data	
PRGM	ADVANCE	-	<p><Description> Ends the step that is operating and operates the next step.</p> <p><Transmission data format> -</p> <p><Setting command example> "PRGM, ADVANCE"</p> <ul style="list-style-type: none"> • When a program is not operating, "NA:CHB NOT READY" is returned. • When program operation holds, "NA:CHB NOT READY" is returned.
	END	End condition	<p><Description> Ends the program operation that is operating at that point, and migrates operation according to the specified end condition.</p> <p><Transmission data format> "end-condition"</p> <p><Setting command example> "PRGM, END, HOLD"</p> <ul style="list-style-type: none"> • When a program is not operating (including remote program operation), "NA:CHB NOT READY" is returned. • "End-condition" is described as follows. <ul style="list-style-type: none"> Hold the final step after the program ends "END,HOLD" Start constant operation (No.1) after the program ends "END,CONST" Turn off the panel power after the program ends "END,OFF" Stop operation after the program ends "END,STANDBY"

■ Operation mode settings

Setting command			Description, data transmission format, setting command example
Main command	Option parameter	Transmission data	
MODE	-	Operation mode	<p><Description> This command switches the chamber to the specified operating mode.</p> <p><Transmission data format> "operation-mode"</p> <p><Setting command example> "MODE, OFF"</p> <ul style="list-style-type: none"> "Operation-mode" is described as follows. <ul style="list-style-type: none"> To turn off panel power "OFF" To stop operation "STANDBY" To perform constant operation (No.1) "CONSTANT" To perform program operation "RUN pattern-number" Returns "NA:DATA NOT READY" when the specified program pattern is not available. To perform remote program operation, see "Editing remote program data".

■ Program pattern editing

Setting command			Description, data transmission format, setting command example
Main command	Option parameter	Transmission data	
PRGM DATA WRITE	PGM pattern number	Edit data	<p><Description> Edits the program data.</p> <p><Transmission data format> See Table 3.10.</p> <p><Setting command example> "PRGM DATA WRITE, PGM1, EDIT START" "PRGM DATA WRITE, PGM1, STEP1, TEMP10.0, TIME1:00" "PRGM DATA WRITE, PGM1, STEP2, HUM100, TIME1:00" "PRGM DATA WRITE, PGM1, COUNT, A(1. 2. 10), B(0. 0. 0)" "PRGM DATA WRITE, PGM1, NAME, SAMPLE-1" "PRGM DATA WRITE, PGM1, END, OFF" "PRGM DATA WRITE, PGM1, EDIT END"</p> <ul style="list-style-type: none"> • When the program-related screen appears on the controller, the network settings are not valid. To edit from communication, switch to a screen other than one for program editing. • When performing humidity-related editing on a temperature-only chamber, "NA:INVALID REQ" is returned. • When setting only the program name or counter without setting the temperature or humidity, "NA:DATA NOT READY" is returned. • When the timer is set for the specified pattern, "NA:CHB NOT READY" is returned. • When the specified pattern is assigned to the operation start setting of measuring instrument synchronization, "NA:CHB NOT READY" is returned. • When a program is operating after a new creation is completed or after a new overwrite is completed, "NA:CHB NOT READY" is returned.

<Program pattern editing: Transmission data details>

- The following two modes are available for program pattern editing.

New mode: Creates new program data.

(Step data must be specified continuously from step 1.)

Overwrite mode: Enables editing of arbitrary step data for program data already created.

- Use the following procedure to edit program data in new mode.

Set a create new start request.

Set the step data for step 1.

Set the step data for step 2.

:

Set the counter setting (can be omitted).

Set the file name (can be omitted).

Set the end condition (can be omitted).

Set a create new end request.

- Use the following procedure to edit program data in overwrite mode.

Set the overwrite start request.

Set the step data for the desired step.

:

Set the overwrite end request.

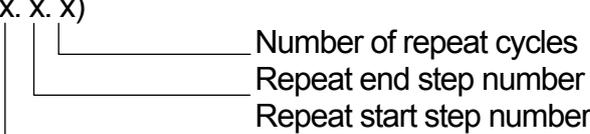
- The following is the description method.

Table 3.3 Transmission data details

Setting		Description method	Default value
Descriptions for new mode	New start	"EDIT START"	/
	New end	"EDIT END"	
	New cancel	"EDIT CANCEL"	
Descriptions for overwrite mode	Overwrite start	"OVER WRITE START"	
	Overwrite end	"OVER WRITE END"	
	Overwrite cancel	"OVER WRITE CANCEL"	
Descriptions for step data		<p>"STEPxx,setting-data"</p> <p>The setting data is described as follows.</p> <p>Temperature set point "TEMPx.x to xxx.x "</p> <p>Temperature gradient "TRAMPON" or "TRAMPOFF"</p> <p>Humidity set point "HUMIx to xxx" ("HUMI OFF" to turn off)</p> <p>Humidity gradient "HRAMPON" or "HRAMPOFF"</p> <p>Exposure time "TIMEx:xx to xxxx:xx"</p> <p>Exposure setting "GRANTY ON" or "GRANTY OFF"</p> <p>Refrigerator setting "REFx"</p> <p>Time-signal setting "RELAY ON x. x..." or "RELAY OFF x. x..."</p> <p>Pause "PAUSE ON" or "PAUSE OFF"</p> <p>Specimen temperature control status "PTCON" or "PTCOFF"</p> <p>Maximum deviation for specimen temperature control "DEVPO.0 to xx.x"</p> <p>Minimum deviation for specimen temperature control "DEVN-xx.x to 0.0"</p> <p>When a parameter is omitted, the value of the previous step is set. (The previous step is set to the default values.)</p>	<p>0.0</p> <p>OFF</p> <p>0</p> <p>OFF</p> <p>0:00</p> <p>OFF</p> <p>9</p> <p>ALL</p> <p>OFF</p> <p>OFF</p> <p>PTCOFF</p> <p>10.0</p> <p>-10.0</p>

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Setting	Description method	Omitted parameter value
Descriptions for program details	<p>Set counter "COUNT,A(x. x. x)[,COUNT,B(x. x. x)]"</p> <p>A(x. x. x)</p>  <ul style="list-style-type: none"> • Either COUNT,A or COUNT,B can be omitted. • To set both, separate with a comma (,). <p>(Example: "COUNT,A(1. 2. 3),B(5.7.10)")</p>	0.0.0
Pattern name	<p>"NAME,pattern-name"</p> <ul style="list-style-type: none"> • The pattern name can be up to 15 single-byte characters. • Lower case letters are converted to upper case letters. • The at symbol (@) cannot be used two or more times in succession in the pattern name. <p>"ABC@DEF": OK "ABC@DE@": OK "ABC@@DE": Not OK</p>	PGM-xx
Temperature upper limit absolute alarm value	<p>"HTEMP, x.x to xxx.x"</p> <p>From 0.0 or the highest set temperature in the pattern to the temperature warning upper limit absolute value</p>	Upper limit of the chamber's allowable range
Temperature warning lower limit absolute value	<p>"LTEMP, x.x to xxx.x"</p> <p>From the temperature warning lower limit absolute value to 0.0 or the lowest set temperature in the pattern</p>	Lower limit of the chamber's allowable range
Humidity warning upper limit absolute value	<p>"HHUMI, x to xxx"</p> <p>From 0 or the highest set humidity in the pattern to the humidity warning upper limit absolute value</p>	Upper limit of the chamber's allowable range
Humidity warning lower limit absolute value	<p>"LHUMI, x to xxx"</p> <p>From the humidity warning lower limit absolute value to 0 or the lowest set humidity in the pattern</p>	Lower limit of the chamber's allowable range
Start condition setting	<p>"PRE MODE, TEMP, setting-mode" or "PRE MODE, HUMI, setting-mode"</p> <ul style="list-style-type: none"> • The setting mode is described as follows. <ul style="list-style-type: none"> No start setting "OFF" Starting with a measured value "PV" Starting with a set value "SV" 	OFF
Start temperature setting	<p>"PRE TSV, x.x to xxx.x"</p> <p>This is required when the temperature setting mode is set to "SV" in the start condition setting.</p> <ul style="list-style-type: none"> • When the temperature setting mode is set to a setting other than "SV", "PARA ERR" is returned. 	0

■ Deleting a program pattern

Setting command			Description, data transmission format, setting command example
Main command	Option parameter	Transmission data	
PRGM ERASE	RAM: Pattern number	-	<Description> Deletes or edits the specified program data.
			<Transmission data format> -
			<Setting command example> "PRGM ERASE, RAM:1" <ul style="list-style-type: none"> • This command deletes all steps of the specified program data. • When the program data-related screen appears on the controller, deletion of the network is not valid. (To delete from communication, switch to a screen other than for program editing.) • Returns "NA:DATA NOT READY" in the following cases. <ul style="list-style-type: none"> When there is no program data in the specified pattern • Returns "NA:CHB NOT READY " in the following cases. <ul style="list-style-type: none"> When the specified pattern is operating. When the timer is set for the specified pattern. When the specified pattern is registered to an end condition (next program). When the specified pattern is assigned to the operation start setting of measuring instrument synchronization.

■ Editing remote program data

Setting command			Description, data transmission format, setting command example
Main command	Option parameter	Transmission data	
RUN PRGM	-	Program data	<Description> Sets remote program operation. (Remote program operation starts when the setting is completed.) <Transmission data format> See Table 3.11. <Setting command example> "RUN PRGM, TEMP10.0 GOTEMP23.0 HUMI85 GOHUMI100 TIME1:00" <ul style="list-style-type: none"> When performing humidity-related editing on a temperature-only chamber, "NA:INVALID REQ" is returned.

<Remote program data editing: Details>

- Remote program operation is one-step program operation that enables control of editing, starting, and ending from the host computer.
- This command starts remote program operation.
- When program operation ends, the final settings are retained. (The end condition is not defined in the remote program data.)
- By setting an interrupt mask, the end of remote program operation can be recognized. See the "MASK" setting command or "SRQ?" monitor command.
- To change the operation state, use the "MODE" or "PRGM" setting command.

Table 3.11 Remote program edit parameters

Setting	Format	Example
Start temperature setting	"TEMP"	"TEMP23.0"
Endpoint temperature setting (can be omitted)	"GOTEMP"	"GOTEMP30.0"
Start humidity setting (can be omitted)	"HUMI"	"HUMI100" ("HUMI OFF" to turn off humidity control)
Endpoint humidity setting (can be omitted)	"GOHUMI"	"GOHUMI50"
Exposure time	"TIME"	"TIME99:59"
Refrigerator setting (can be omitted)	"REF"	"REF9"
Time signal setting (can be omitted)	"RELAYON" or "RELAYOFF"	"RELAYON, 1, 2"

- If the endpoint temperature (humidity) setting is omitted, the start temperature (humidity) setting is used.
- If the refrigerator setting or time-signal setting is omitted, the setting for the previous remote program operation is used. (The default refrigerator setting is "REF9", and the default time-signal setting is "OFF" for all.)
- The order for describing the settings cannot be changed.

■ Constant setup specimen temperature settings

Setting command			Description, data transmission format, setting command example
Main command	Option parameter	Transmission data	
TEMP PTC	-	Specimen temperature control status Upper deviation Lower deviation	<p><Description> Sets the specimen temperature control set point in constant setup.</p> <p><Transmission data format> "specimen-temperature-control-status, upper-deviation, lower-deviation"</p> <p><Setting command example> "TEMP PTC, PTCON, DEVP10.0, DEVN-10.0"</p> <ul style="list-style-type: none"> Specify the specimen temperature control status as follows. Specimen temperature control enabled: "PTCON" Specimen temperature control disabled: "PTCOFF" Specify the upper deviation as follows. "DEVP-numerical-value" Specify the numerical value from 0.0 to 50.0. Specify the lower deviation as follows. "DEVN-numerical-value" Specify the numerical value from -50.0 to 0.0. When specimen temperature control option is not equipped, "NA:INVALID REQ" is returned.

■ Specimen temperature control parameter setting

Setting command			Description, data transmission format, setting command example
Main command	Option parameter	Transmission data	
PTC	-	Upper limit,	<Description> Sets the specimen temperature control parameters.
		Lower limit,	<Transmission data format> "upper-limit, lower-limit, P-parameter, filter-value, I-parameter, option-setting-1, option-setting-2"
		P parameter, Filter value, I parameter, Option setting 1, Option setting 2	<Setting command example> "PTC, 150.0, -40.0, 1.0, 36.0, 2.0, 0.0, 0.0" <ul style="list-style-type: none"> Specify the upper limit from the chamber lower limit setting to the chamber upper limit setting. Specify the lower limit from the chamber upper limit setting to the chamber lower limit setting. Specify the P parameter from 0.0 to 100.0. Specify the I parameter from 0.0 to 1000.0. Specify the filter value from 0.0 to 1000.0. "Option-setting-1" and "option-setting-2" are unused. Specify "0". When specimen temperature control option is not equipped, "NA:INVALID REQ" is returned.

■ Reception state list

Table 3.12 Reception state list

			Panel power off	Operation stopped	In constant operation	In program operation	Program paused	Hold last program	In remote program operation	Remotely paused	Remotely holding last program	Setting change protection on	Operation protection on	Remote program protection on*	Alarm occurring	Timer set	Sample recording	External memory (graph data) in use	
Setting command	POWER	ON	○	○	○	○	○	○	○	○	○	○	○	×	-	○	○	○	
		OFF	△	○	○	○	○	○	○	○	○	○	○	○	×	○	○	○	
	TEMP	Sxxx	○	○	○	○	○	○	○	○	○	○	○	○	×	○	○	○	
		Hxxx	○	○	○	○	○	○	○	○	○	○	○	○	×	○	○	○	
		Lxxx	○	○	○	○	○	○	○	○	○	○	○	○	×	○	○	○	
			○	○	○	○	○	○	○	○	○	○	○	○	×	○	○	○	
	HUMI	Sxxx	○	○	○	○	○	○	○	○	○	○	○	○	×	○	○	○	
		Hxxx	○	○	○	○	○	○	○	○	○	○	○	○	×	○	○	○	
		Lxxx	○	○	○	○	○	○	○	○	○	○	○	○	×	○	○	○	
	SET		○	○	○	○	○	○	○	○	○	○	○	○	×	○	○	○	
	MODE	OFF	○	○	○	○	○	○	○	○	○	○	○	○	×	○	○	○	
		STANDBY	○	○	○	○	○	○	○	○	○	○	○	○	×	○	○	○	
		CONSTANT	○	○	○	○	○	○	○	○	○	○	○	○	×	○	○	○	
		RUNxxx	○	○	○	○	○	○	○	○	○	○	○	○	×	○	○	○	
	RUN PRGM		○	○	○	○	○	○	○	○	○	○	○	×	○	○	○		
	PRGM	RUN	○	○	○	○	○	○	○	○	○	○	○	○	×	○	○	○	
		PAUSE	×	×	×	○	×	×	○	×	×	○	○	○	×	○	○	○	
		CONTINUE	×	×	×	×	○	×	×	○	×	○	○	○	×	○	○	○	
		ADVANCE	×	×	×	○	○	×	×	×	×	○	○	○	×	○	○	○	
		END	HOLD	×	×	×	○	○	△	○	○	△	○	○	×	○	○	○	○
			OFF	×	×	×	○	○	○	○	○	○	○	○	×	○	○	○	○
			STANDBY	×	×	×	○	○	○	○	○	○	○	○	×	○	○	○	○
	CONST		×	×	×	○	○	○	○	○	○	○	○	×	○	○	○	○	
	PRGM DATAWRITE		○	○	○	○	○	○	○	○	○	○	○	×	○	○	○		
	PRGM ERASE		○	○	○	○	○	○	○	○	○	○	○	×	○	○	○		
	KEY PROTECT		×	○	○	○	○	○	○	○	○	○	○	×	○	○	○		
	MASK		○	○	○	○	○	○	○	○	○	○	○	×	○	○	○		
	SRQ		○	○	○	○	○	○	○	○	○	○	○	×	○	○	○		
	DATE		○	○	○	×	×	×	○	○	○	○	○	×	○	×	×	×	
	TIME		○	○	○	×	×	×	○	○	○	○	○	×	○	×	×	×	
	TIMER WRITE		○	○	○	○	○	○	○	○	○	○	○	×	○	○	○	○	
	TIMER ERASE		○	○	○	○	○	○	○	○	○	○	○	×	○	○	○	○	
TIMER		○	○	○	○	○	○	○	○	○	○	○	×	○	○	○	○		
Monitor command	PRGM MON?		×	×	×	○	○	○	×	×	×	○	○	○	○	○	○		
	RUN PRGM MON?		×	×	×	×	×	×	○	○	○	○	○	○	○	○	○		

○: Processed normally (OK response returned).
 △: OK response is returned, but no change to state.
 ×: Error message returned. Processing not accepted.
 * Error message details: When remote program protection is on
 Other

"NA:PROTECT ON"
 "NA:CHB NOT READY"

Chapter 4 Specifications

4.1 Specifications

When performing communication, match the communication port setting of the host computer with the communication setting of the chamber.

4.1.1 Ethernet specifications

- Standard
100BASE-TX
- Protocol
TCP/IP
- Other

AUTO-MDIX (The LAN port can recognize which port is used between MDI and MDI-X on the partner device, and then automatically switch the transmitting and receiving terminals.)

Appendix: Differences with Older Series

A-1 Differences between the Platinous K series and Platinous J series

New functions have been added to the J series, so there are differences between the commands that are supported by the J series and the K series.

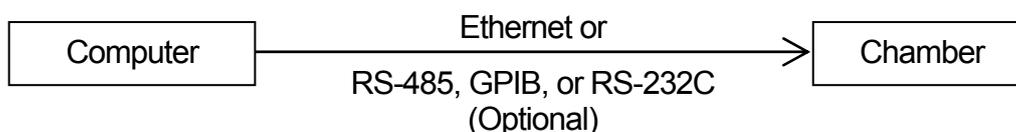
■ Connection method

There is no difference in the connection methods. The K series and J series can be connected in the same way.

Communication function interfaces

	J series		K series
	Software version 30.00.STD or later	Software version Pre-30.00.STD	
Ethernet communication	Standard equipment	Not supported *1	Not equipped
RS-485	Optional equipment	Optional equipment	Standard equipment
RS-232C	Optional equipment	Optional equipment	Optional equipment
GPIO	Optional equipment	Optional equipment	Optional equipment

*1 WEB Manager-only



■ Precautions when using commands

Note that the following functions vary depending on the chamber that you are using.

	J series	K series
Upper and lower limit alarm settings	Multiple (Alarm settings can be configured per pattern.)	1 (The setting is shared within the chamber.)
Number of program patterns	RAM: 40 patterns Not equipped with ROM (This is equipped with a function for reading external memory, so there are no ROM patterns.) * If you specify ROM, the response will be "NA."	RAM: 20 patterns RAM: 10 patterns
Program name	15 characters (Because of the function for writing external memory, the following characters are prohibited.) ¥ / : * ? " < > @@ (The @ character cannot be used consecutively.) * The program name is written to external memory as the file name. * If you specify any of the prohibited characters, the response will be "NA."	14 characters

	J series	K series
Number of constant patterns	3 (Because the number of constant patterns has increased to three, No.1 is the target of commands, and No.2 and No.3 cannot be used.)	1
Set timer	3 Start timer End timer Quick timer (A quick timer, which just enables you to set the elapsed time and the mode, has been added.)	2 Start timer End timer

■ Supported commands

Commands related to specimen temperature have been added to the commands supported by the J series.

(1) Setting commands

Command		Model		Remarks	
		J series	K series		
Setting command	Operation settings	POWER	○	○	
		TEMP	○	○	
		HUMI	○	○	
		SET	○	○	
		RELAY	○	○	
		MODE	○	○	
		TEMP PTC	○	×	
	Program operation setting	RUN PRGM	○	○	
		PRGM	○	○	The parameters are different.
		PRGM DATA WRITE	○	○	The parameters are different.
		PRGM ERASE	○	○	
	Chamber settings	KEY PROTECT	○	○	
		MASK	○	○	
		SRQ	○	○	
		DATE	○	○	
		TIME	○	○	
		TIMER WRITE	○	○	The parameters are different.
		TIMER ERASE	○	○	The parameters are different.
		TIMER	○	○	The parameters are different.
	PTC	○	×		

○: Supported

×: Not supported

(2) Monitor commands

Constant setup monitoring commands and commands related to specimen temperature have been added to the commands supported by the J series.

Command		Model		Remarks	
		J series	K series		
Monitor commands	Operation monitoring	MODE?	○	○	The response data is different.
		MON?	○	○	The response data is different.
		TEMP?	○	○	The response data is different.
		HUMI?	○	○	The response data is different.
		SET?	○	○	The response data is different.
		RELAY?	○	○	
		REF?	○	○	
		%?	○	○	
		MON PTC?	○	×	
		SET PTC?	○	×	
	Constant monitoring	CONSTANT SET?	○	×	
	Program monitoring	RUN PRGM MON?	○	○	
		RUN PRGM?	○	○	
		PRGM MON?	○	○	
		PRGM SET?	○	○	
		PRGM DATA?	○	○	The response data is different.
		PRGM USE?	○	○	The response data is different.
		PRGM DATA PTC?	○	×	
	Management information monitoring	ALARM?	○	○	
		KEY PROTECT?	○	○	
		TYPE?	○	○	
		ROM?	○	○	The response data is different.
		MASK?	○	○	
		SRQ?	○	○	
		DATE?	○	○	The response data is different.
		TIME?	○	○	
		TIMER LIST?	○	○	The response data is different.
		TIMER ON?	○	○	The response data is different.
		TIMER USE?	○	○	The response data is different.
		PTC?	○	×	
		?	×	○	* This is no longer supported by the J series.

○: Supported

×: Not supported

■ Parameter and response data differences

(1) Setting commands

(1) -1. Program operation control

PRGM, RUN	<p>Because the number of ROM and RAM patterns has changed on the J series, the way that parameters are specified is different from that of the K series.</p> <p>Example: PRGM, RUN, RAM: 1, STEP1</p> <p>Platinous K> "RAM:1" to "RAM:20" / "ROM:21" to "ROM:30"</p> <p>Platinous J> "RAM:1" to "RAM:40"</p> <p>* Returns "NA" when ROM is specified.</p>
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(1) -2. Program

PRGM DATA WRITE	<p>Because the number of patterns has changed on the J series, the way that parameters are specified is different from that of the K series.</p> <p>Example: PRGM DATAWRITE, PGM 1, EDITSTART</p> <p>Platinous K> PGM1 to PGM20</p> <p>Platinous J> PGM1 to PGM40</p>																																		
	<p>The following functions have been added to the J series. (Can be omitted.)</p> <ul style="list-style-type: none"> • The upper and lower limits can be set per pattern. • The conditions for starting the program can be set. 																																		
	<table border="1"> <thead> <tr> <th rowspan="2">Optional parameter</th> <th colspan="2">Model</th> <th rowspan="2">Description</th> </tr> <tr> <th>J</th> <th>K</th> </tr> </thead> <tbody> <tr> <td>HTEMP</td> <td style="text-align: center;">○</td> <td style="text-align: center;">×</td> <td>Temperature warning upper limit absolute value</td> </tr> <tr> <td>LTEMP</td> <td style="text-align: center;">○</td> <td style="text-align: center;">×</td> <td>Temperature warning lower limit absolute value</td> </tr> <tr> <td>HHUMI</td> <td style="text-align: center;">○</td> <td style="text-align: center;">×</td> <td>Humidity warning upper limit absolute value</td> </tr> <tr> <td>LHUMI</td> <td style="text-align: center;">○</td> <td style="text-align: center;">×</td> <td>Humidity warning lower limit absolute value</td> </tr> <tr> <td>PRE MODE</td> <td style="text-align: center;">○</td> <td style="text-align: center;">×</td> <td>Start condition setting</td> </tr> <tr> <td>PRE TSV</td> <td style="text-align: center;">○</td> <td style="text-align: center;">×</td> <td>Start temperature setting</td> </tr> <tr> <td>PRE HSV</td> <td style="text-align: center;">○</td> <td style="text-align: center;">×</td> <td>Start humidity setting</td> </tr> </tbody> </table> <p>○: Supported ×: Not supported</p>	Optional parameter	Model		Description	J	K	HTEMP	○	×	Temperature warning upper limit absolute value	LTEMP	○	×	Temperature warning lower limit absolute value	HHUMI	○	×	Humidity warning upper limit absolute value	LHUMI	○	×	Humidity warning lower limit absolute value	PRE MODE	○	×	Start condition setting	PRE TSV	○	×	Start temperature setting	PRE HSV	○	×	Start humidity setting
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	J	K																																	
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PRE MODE	○	×	Start condition setting																																
PRE TSV	○	×	Start temperature setting																																
PRE HSV	○	×	Start humidity setting																																

(1) -3. Management settings

TIMER WRITE	<p>A quick timer has been added to the J series.</p> <p>Example: TIMERWRITE, NO0, 10:00, CONSTANT</p> <ul style="list-style-type: none"> • Because the number of patterns has changed, the way that parameters are specified is different from that of the K series. <p>Example: TIMERWRITE, NO1, MODE3, 10:00, RUN, ROM:21, STEP1</p> <p>Platinous K> "RAM:1" to "RAM:20" / "ROM:21" to "ROM:30"</p> <p>Platinous J> "RAM:1" to "RAM:40"</p> <p>* Returns "NA" when ROM is specified.</p>
TIMERE RASE	<p>A quick timer has been added to the J series.</p> <p>Example: TIMERE RASE, NO0</p>
TIMER	<p>A quick timer has been added to the J series.</p> <p>Example: TIMER, ON, 0</p>

(2) Monitor commands

(2)-1. Operation monitoring

MODE?	<p>"MODE?,DETAIL" response This option parameter is only supported by the J series. This parameter enables you to more finely monitor the operation state.</p>																											
MON?	<p>"MON?,DETAIL" response This option parameter is only supported by the J series. This parameter enables you to more finely monitor the operation state.</p>																											
TEMP?	<p>"TEMP?" response On the K series, you could only set one upper and one lower limit per chamber. However, on the J series, it is possible to set different limits per operation setting. Therefore, the temperature set point, warning upper limit value, and warning lower limit value responses vary as shown below.</p> <table border="1"> <thead> <tr> <th rowspan="2">Chamber status</th> <th colspan="2">J series response</th> <th colspan="2">K series response</th> </tr> <tr> <th>Temp set point</th> <th>Upper and lower limit alarm values</th> <th>Temp set point</th> <th>Upper and lower limit alarm values</th> </tr> </thead> <tbody> <tr> <td>Panel power off</td> <td colspan="2" rowspan="2">Set point of constant No. 1</td> <td rowspan="2">The set point from the previous time the chamber was in operation</td> <td rowspan="4">Upper and lower limit set points of the chamber</td> </tr> <tr> <td>Stopped</td> </tr> <tr> <td>In constant operation</td> <td colspan="2" rowspan="2">Set point configured during operation</td> <td rowspan="2"></td> </tr> <tr> <td>In program operation</td> </tr> <tr> <td>In remote program operation</td> <td>Remote set point</td> <td>Set point of constant No. 1</td> <td>Remote set point</td> </tr> </tbody> </table>				Chamber status	J series response		K series response		Temp set point	Upper and lower limit alarm values	Temp set point	Upper and lower limit alarm values	Panel power off	Set point of constant No. 1		The set point from the previous time the chamber was in operation	Upper and lower limit set points of the chamber	Stopped	In constant operation	Set point configured during operation			In program operation	In remote program operation	Remote set point	Set point of constant No. 1	Remote set point
Chamber status	J series response		K series response																									
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HUMI?	<p>"HUMI?" response On the K series, you could only set one upper and one lower limit per chamber. However, on the J series, it is possible to set different limits per operation setting. Therefore, the humidity set point, warning upper limit value, and warning lower limit value responses vary as shown below.</p> <table border="1"> <thead> <tr> <th rowspan="2">Chamber status</th> <th colspan="2">J series response</th> <th colspan="2">K series response</th> </tr> <tr> <th>Humidity set point</th> <th>Upper and lower limit alarm values</th> <th>Humidity set point</th> <th>Upper and lower limit alarm values</th> </tr> </thead> <tbody> <tr> <td>Panel power off</td> <td colspan="2" rowspan="2">Set point of constant No. 1</td> <td rowspan="2">The set point from the previous time the chamber was in operation</td> <td rowspan="4">Upper and lower limit set points of the chamber</td> </tr> <tr> <td>Stopped</td> </tr> <tr> <td>In constant operation</td> <td colspan="2" rowspan="2">Set point configured during operation</td> <td rowspan="2"></td> </tr> <tr> <td>In program operation</td> </tr> <tr> <td>In remote program operation</td> <td>Remote set point</td> <td>Set point of constant No. 1</td> <td>Remote set point</td> </tr> </tbody> </table>				Chamber status	J series response		K series response		Humidity set point	Upper and lower limit alarm values	Humidity set point	Upper and lower limit alarm values	Panel power off	Set point of constant No. 1		The set point from the previous time the chamber was in operation	Upper and lower limit set points of the chamber	Stopped	In constant operation	Set point configured during operation			In program operation	In remote program operation	Remote set point	Set point of constant No. 1	Remote set point
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SET?	<p>"SET?" response The refrigeration capacity set point responses vary as shown below. On the J series, "REF0" is returned when the panel power is off and when the chamber is not in operation.</p> <table border="1"> <thead> <tr> <th>Chamber status</th> <th>J series response</th> <th>K series response</th> </tr> </thead> <tbody> <tr> <td>Panel power off</td> <td>REF0</td> <td>Constant set point</td> </tr> <tr> <td>Stopped</td> <td>REF0</td> <td>REF9</td> </tr> <tr> <td>In constant operation</td> <td colspan="2">Constant set point</td> </tr> <tr> <td>In program operation</td> <td colspan="2">Program set point</td> </tr> <tr> <td>In remote program operation</td> <td colspan="2">Remote set point</td> </tr> </tbody> </table>				Chamber status	J series response	K series response	Panel power off	REF0	Constant set point	Stopped	REF0	REF9	In constant operation	Constant set point		In program operation	Program set point		In remote program operation	Remote set point							
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In remote program operation	Remote set point																											

(2)-2. Program monitoring

<p>PRGM DATA?</p>	<p>Optional parameter changes Because the number of ROM and RAM patterns has changed on the J series, the way that parameters are specified is different from that of the K series. Example: PRGM DATA?, <u>RAM: 1</u> Platinous K> "RAM:1" to "RAM:20" / "ROM:21" to "ROM:30" Platinous J> "RAM:1" to "RAM:40" * Returns "NA" when ROM is specified.</p> <hr/> <p>Response data format changes Because a pause setting has been added to the step information response on the J series, the program data monitor response varies as shown below. Example: PRGM DATA?, <u>RAM: 1</u>, STEP1 Platinous K response> step-number, temperature-set-point, temperature-gradient [, humidity-set-point, humidity-gradient], time-setting, exposure-setting, refrigerator-setting[, relay ON] Platinous J response> step-number, temperature-set-point, temperature-gradient [, humidity-set-point, humidity-gradient], time-setting, exposure-setting, refrigerator-setting[, relay ON], pause-setting Pause setting response description: PAUSEON or PAUSEOFF</p>								
<p>PRGM USE?</p>	<p>Optional parameter changes Because the number of ROM and RAM patterns has changed on the J series, the way that parameters are specified is different from that of the K series. Example: PRGM USE?, <u>RAM: 1</u> Platinous K> "RAM:1" to "RAM:20" / "ROM:21" to "ROM:30" Platinous J> "RAM:1" to "RAM:40" * Returns "NA" when ROM is specified.</p> <hr/> <p>Response data format changes</p> <ul style="list-style-type: none"> Because the number of RAM patterns has increased, the number of response data bytes is different from that of the K series. Example: PRGM USE?, RAM Platinous K response> Max. 53 bytes 20, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20 Platinous J response> Max. 113 bytes 40, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, , 38, 39, 40 The date format is different from that of the K series. Example: PRGM USE?, RAM: 1 <table border="1" data-bbox="357 1576 1422 1682"> <thead> <tr> <th rowspan="2">Response description</th> <th colspan="2">Response format</th> </tr> <tr> <th>J</th> <th>K</th> </tr> </thead> <tbody> <tr> <td>Write date</td> <td>12. 02/01</td> <td>12. 2/1</td> </tr> </tbody> </table>	Response description	Response format		J	K	Write date	12. 02/01	12. 2/1
Response description	Response format								
	J	K							
Write date	12. 02/01	12. 2/1							

(2)-3. Management information monitoring

ROM?	<p>"ROM?" response The way that the version is expressed has been changed.</p> <table border="1" data-bbox="357 255 1422 427"> <thead> <tr> <th data-bbox="357 255 660 293">Model</th> <th data-bbox="660 255 1422 293">Response format</th> </tr> </thead> <tbody> <tr> <td data-bbox="357 293 660 360">K series</td> <td data-bbox="660 293 1422 360">[ROM type] [ROM version] Example: JPC 4.02</td> </tr> <tr> <td data-bbox="357 360 660 427">J series</td> <td data-bbox="660 360 1422 427">[ROM type] [ROM version] Example: P3PLJCN10.00STD</td> </tr> </tbody> </table>	Model	Response format	K series	[ROM type] [ROM version] Example: JPC 4.02	J series	[ROM type] [ROM version] Example: P3PLJCN10.00STD		
Model	Response format								
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J series	[ROM type] [ROM version] Example: P3PLJCN10.00STD								
DATE?	<p>The date format is different from that of the K series.</p> <table border="1" data-bbox="357 533 1422 636"> <thead> <tr> <th data-bbox="357 533 660 600" rowspan="2">Response description</th> <th colspan="2" data-bbox="660 533 1422 571">Response format</th> </tr> <tr> <th data-bbox="660 571 1038 600">J</th> <th data-bbox="1038 571 1422 600">K</th> </tr> </thead> <tbody> <tr> <td data-bbox="357 600 660 636">Date</td> <td data-bbox="660 600 1038 636">12. 02/01</td> <td data-bbox="1038 600 1422 636">12. 2/1</td> </tr> </tbody> </table>	Response description	Response format		J	K	Date	12. 02/01	12. 2/1
Response description	Response format								
	J	K							
Date	12. 02/01	12. 2/1							
TIMER LIST?	<p>Optional parameter changes A quick timer has been added to the J series. Example: TIMERLIST?, 0</p> <p>Response data format changes Response example: TIMERLIST?, 1 -> "<u>timer-number, start-mode, operation-mode</u>" Platinous K response: Timer number: " TIMER No1" or "TIMER No2" Start mode: " MODE1, 12.2/1, 10:00" Run mode: " RUN, ROM:21, STEP1" Platinous J response> Timer number: " 0" to "2" Start mode: " MODE1, 12.02/01, 10:00" Run mode: " RUN, RAM:21, STEP1"</p>								
TIMER ON?	<p>Response data format changes Because a quick timer function has been added to the J series, the number of response data bytes is different from that of the K series. Example: TIMERON?</p>								
TIMER USE?	<p>Platinous K response> Max. 5 bytes 2, 1, 2 Platinous J response> Max. 7 bytes 3, 0, 1, 2</p>								

■ Error message differences

The error messages that follow "NA:" differ between the K series and the J series.

Examples of different error messages (for details, see the error message list)

	J series response	K series response
If "HUMI?" is sent to a chamber that is not equipped with the humidity function.	NA:INVALID REQ	NA: CONT NOT READY-1
If "KEYPROTECT,ON" is sent when the panel power is off.	NA:CHB NOT READY	NA: CONT NOT READY-4

List of J series error messages (underlined error messages are the same on the K series)

Error message	Error description	Example
<u>CMD_ERR</u>	Main command error	"ROM?" entered as "RUM?"
<u>PARA_ERR</u>	Option parameter error	Text was entered for numerical-only parameter.
<u>DATA NOT READY</u>	Specified data does not exist	An unregistered program number was specified.
<u>DATA OUT OF RANGE</u>	Specified value outside the data range	"TEMP,S300" was specified for the setting range of 0°C to 200°C.
<u>PROTECT ON</u>	[Set Protection] - [Remote setting] is set to [ON] on the chamber.	Attempt to change the temperature set point while the remote setting is on.
INVALID REQ	Unsupported function specified	A command related to the time signal was sent to a chamber not equipped with the time signal option.
CHB NOT READY	Command specified when the chamber is not ready to receive*	Attempt to change KEYPROTECT when the panel power is off. "PRGM,PAUSE" (pause) was executed when the chamber was stopped.

* For details, see "Table 3.12 Reception state list".

List of K series error messages (underlined error messages are the same on the J series)

Error message	Error description	Example
<u>CMD ERR</u>	The command is not recognizable as command data.	Command data such as "TENMP?" (the correct command is "TEMP?") was sent.
ADDR ERR	Address error	The address part was appended to command data in which an address cannot be expressed.
CONT NOT READY-1	Unable to execute the command.	Command data related to humidity was sent to a chamber that does not support humidity control.
CONT NOT READY-2	Unable to execute the command.	Command data related to program operation was sent to a chamber on which a program is not operating.
CONT NOT READY-3	Unable to execute the command.	Command data related to P controllers was sent to a T controller type.
CONT NOT READY-4	Unable to execute the command.	An attempt was made to change the protection settings when the power was off.
CONT NOT READY-5	Unable to execute the command.	An attempt was made to set a time signal that cannot be changed.
<u>DATA NOT READY</u>	Requested data does not exist.	An attempt was made to operate the chamber with a program pattern that is not registered in the program settings.
<u>PARA ERR</u>	Attached parameter error	The parameter is missing in the command. The attached parameter cannot be recognized because of a typographical error, etc.
<u>DATA OUT OF RANGE</u>	The specified value is outside the data range.	An attempt was made to set a temperature set point that exceeds the temperature upper limit alarm value or is less than the temperature lower limit alarm value.
<u>PROTECT ON</u>	Settings are protected against changes by the protect setting.	An attempt was made to change the temperature settings when the protection settings were enabled.
PRGM WRITE ERR-1	Program data editing error	An attempt was made to write an invalid pattern.
PRGM WRITE ERR-2	Program data editing error	An attempt was made to write data without first specifying edit or overwrite mode.
PRGM WRITE ERR-3	Program data editing error	A request related to editing was made when program data was not being edited.
PRGM WRITE ERR-4	Program data editing error	Program data is being edited, so command reception is prohibited.
PRGM WRITE ERR-5	Program data editing error	Program data is being overwritten, so command reception is prohibited.
PRGM WRITE ERR-6	Program data editing error	A request related to overwriting was made when program data was not being overwritten.
PRGM WRITE ERR-7	Program data editing error	A program pattern number that differs from that of the program pattern being written was specified.

Error message	Error description	Example
PRGM WRITE ERR-8	Program data editing error	A specification that would break the step number sequence was made.
PRGM WRITE ERR-9	Program data editing error	Counter setting error
PRGM WRITE ERR-10	Program data editing error	An attempt was made to edit the program data that is in operation.
PRGM WRITE ERR-11	Program data editing error	An attempt was made to configure the counter setting or the end setting while there was no valid data.
PRGM WRITE ERR-12	Program data editing error	An attempt was made to edit program data that was created on a P controller.
PRGM WRITE ERR-13	Program data editing error	An attempt was made to set other invalid step data.
PRGM WRITE ERR-14	Program data editing error	An attempt was made to configure the exposure setting when a gradient setting was on.
PRGM WRITE ERR-15	Program data editing error	An attempt was made to configure the humidity control gradient setting when the humidity control was off.

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