Compact Ultra Low Temperature Chamber

MC‑712R·812R

LOW GWP REFRIGERANT

High performance and reliability come in a compact package, covers wide range of temperature testing needs, from ultra-low temperature -85°C to high temperature +180°C.

Thanks to N-Instrumentation, now it's available Ethernet connection, which allows you to control and monitor the chamber remotely, from a pc via web browser.
The new designed 36 percent larger square shape frost free window, made from multi layer glass with heater gives you superior visibility.

MC-812R

To minimize our chambers potential environmental impact

R-449A is the best alternative to R-404A

R-404A
GWP
3920

▶

64% Reduction

R-449A
GWP
1397

*R-449A is available on request

Example of connection with Capacitor/Inductor Temperature Characteristics Evaluation System, Model AMQ

Characteristics
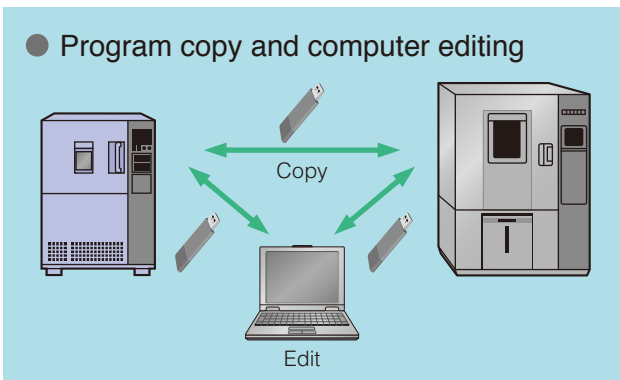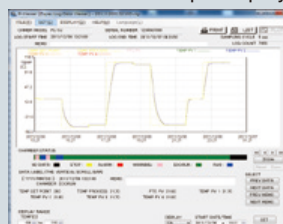

Test area

USB memory port

● Program copy and computer editing

Copy

Edit

● **Web browser**

Program editing

Graph display

● Wide temperature range

Two models are available: a chamber with a temperature range from -85°C to +180°C and a chamber with a temperature range from -75°C to +100°C. They can be used for various purposes including temperature characteristic testing and low temperature storage testing.

● Remote monitoring and control (Ethernet connection)

By adding optionally available "Ethernet Port (LAN Port)", you can connect the chamber to your local area network. By doing so, you can control and monitor the chamber from any computer on the network, using a web browser. You can program test patterns, start and stop the operation without you actually being at the site.

* This operation can only be performed when the power breaker is "ON"

● Using sampling data

Sampling data (temperature set point and process value) can be copied via a USB memory device or recorded directly. It is also possible to copy program patterns between chambers without using a PC, enabling effective use of data.

* USB memory is not included.

● Editing program patterns and displaying graphs

The program patterns registered in the test chamber can be edited via web browser and sampling data can be displayed as graphs.

Using the PC application software "Pattern Manager Lite"*, program patterns on a PC can be edited, displayed as graphs or output as CSV data even if offline.

*The Pattern Manager Lite software allows you to edit programs for your cabinet, view and edit data as graph, etc.
The software can be downloaded from the Test Navi website.

Controller

Tabbed user interface

Provides high resolution and fast display. Tabs at the bottom of the screen make it easy to activate any section.

Register test patterns

Up to 40 program operation setting with maximum of 99 steps and 3 constant operation settings can be registered.

Trend graph output

Trend graphs are displayed in the screen and recorded in the internal memory according to set conditions. Data can be also recorded directly onto USB memory for backup purposes. Measurement intervals and other conditions are capable to change.

Information

The information section shows information on the chamber status. Messages displayed according to operating timer inform you of maintenance checks. It is also possible to register and use additional notification items.
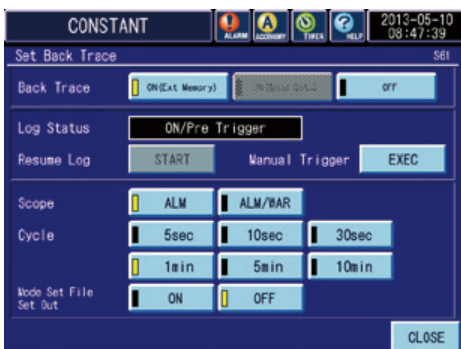
Supported languages

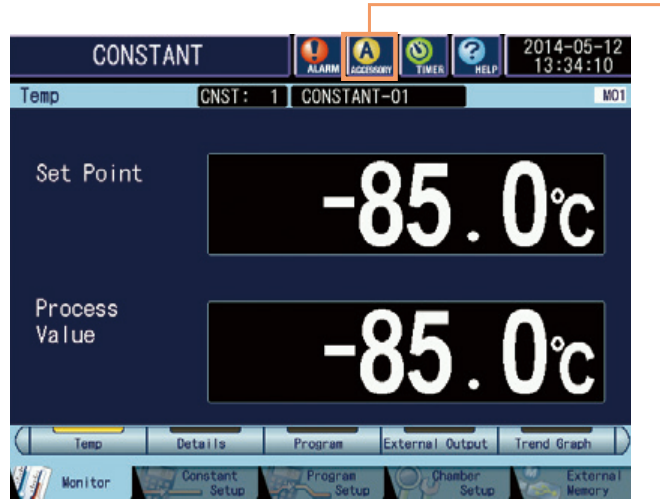A simple operation changes display text to English or Russian.

Backtrace function

When the chamber stops because of trouble, the operation status just before the chamber stops is automatically recorded and saved. Saved data can be transferred by USB memory.
E-mail the data to ESPEC, and to be provided troubleshooting.

Backtrace setting

Information

N-Instrumentation

Operating mode	Constant operation, program operation, Remote operation, stop	
Setting range	Constant setup	3 patterns
	Program setup	40 patterns (99 steps per program)
Language	English, Russian (switch without restarting)	

External memory function	• Interface
	  USB 2.0 standard compliant (A-type connector)
	• Supported functions
	  Write log, Read/Write program (application software: Pattern Manager Lite), write backtrace	

Web function (Optional)	• Interface
	  Ethernet port (100base-TX)
	• Web application
	  Monitor, setting operation, data collection, e-mail notification	

SPECIFICATIONS

Model		MC-712R	MC-812R
System		Balanced Temperature Control system (BTC system)	
Performance *1	Temp. range	−75°C to +100°C	−85°C to +180°C
	Temp. fluctuation	±0.5°C	±0.5°C: at −85°C to +100°C ±1.0°C: at +100.1°C to +180°C
	Temp. gradient / Temp. variation in space	4.0°C	4.0°C: at −85°C to +100°C 8.0°C: at +100.1°C to +180°C
	Temp. rate of change	Heat up rate: 7.0°C /min Pull down rate: 1.7°C /min	Heat up rate: 5.5°C /min Pull down rate: 2.2°C /min
	Temp. extreme achievement time *2	Heat up time:　+20°C→+100°C　20 min Pull down time:　+20°C→−70°C　60 min	Heat up time:　+20°C→+180°C　30 min Pull down time:　+20°C→−80°C　70 min
Heater		Nichrome-strip wire heater 1 kW	
Cooler		Plate-fin cooler	
Refrigeration system		Mechanical cascade refrigeration system (air-cooled condenser)	
Refrigerator		Hermetically sealed compressor R-404A〔R-449A is available on request〕, R-508A	
Expansion mechanism		Capillary tube system	
Fittings		Viewing window (W107×H120 mm with frost prevention heater), Cable port (ø50 mm×1), Power cable (about 3.0 m), Drain hose (1.5 m), USB memory port, Specimen power supply control terminal, RS-485 interface	
Capacity		64L	
Inside dimensions		W400×H400×D400 mm	
Outside dimensions *3		W900×H1200×D610 mm	
Weight		165kg	
Power supply	200V AC 3ø 3W 50/60Hz	12A	14A
	220V AC 3ø 3W 60Hz	12A	14A
	380V AC 3ø 4W 50Hz	8.3A	9.2A
Allowable ambient conditions		0°C to +40°C	

*1 The performance values are based on IEC60068-3-5;2001, JTM K07;2007 for ambient temperature +23°C, related humidity 65%rh, rated voltage, and no specimen.
*2 Temperature extreme achievement time accuracy is within Max. +10% due to power frequency change.
*3 Excluding protrusions.

ACCESSORIES

- Shelf (stainless) ——————————2
- Shelf brackets (stainless) ————————2 sets
- Cable port rubber plug (ø50 mm) ——————1
- Chamber lamp ——————————1
- Glass tube fuse———— 1 (250V AC 3A), 2 (250V AC 5A)
- Thermal fuse ——————————1
- Operation manual (CD) ——————————1
- Warranty card ——————————1

Low GWP Refrigerant

R-449A is available on request.

SAFETY DEVICES

- Leakage breaker for power supply (for 200/220V AC only)
- Circuit breaker (for 380V AC only)
- Control circuit short circuit protective fuse
- System error
- Room temperature compensation burnout detection circuit.
- Dry bulb temperature burnout detection circuit
- Temperature switch for air circulator
- Thermal fuse
- Refrigerator overload relay
- SSR overload & short circuit protecting circuit breaker
- Reverse prevention relay
- Temperature switch for compressor
- Refrigerator automatic delay circuit (built inside temperature controller)
- Absolute upper/lower temperature limit alarm (with built-in temperature controller)
- Overheat protector
- Temperature upper limit deviation alarm
- Specimen power supply control terminal
- Electrical compartment door switch

Power cable

Select one instead of the standard 3 m cable.
• 5 m
• 10 m
* Excluding 380V AC.

Additional cable port

Provided in addition / replacement of the standard cable port (left side, ø50 mm).
Available location:
• Left side
• Ceiling
Available dimensions:
• ø25 mm
• ø50 mm
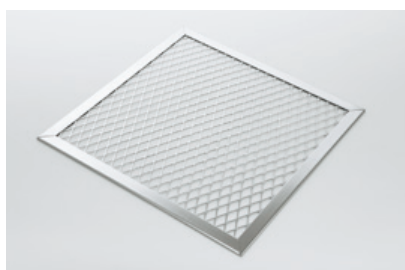• ø100 mm
* Comes with a rubber plug and a cap.

Cable port rubber plug

Prevents air leakage from the cable port.
• 50 mm

Shelf / Shelf bracket

Equivalent to standard accessory.

Shelf

Web function Ethernet port

It is an embedded server solution that allows monitoring and programming chamber via any computer, tablet computer, or other terminal.

I/O Interface

Communication ports to connect the chamber to a PC.
• RS-232C
• GPIB

Communication cables

• RS−485   5 m / 10 m / 30 m
• GPIB   2 m / 4 m

Paperless recorder

A temperature recorder that utilizes a liquid-crystal display fitted with a touch-panel.
Display: 5.7inch color touch panel
Scan interval: 5 sec (default)
Internal recording media:
   Flash memory 8MB
External recording media:
   CF memory card
   (Supplies with a 256 MB CF card)
   USB flash drive

< Temperature type >
No. of input channel:
   Temperature 1
   (5 more channels can be turned ON)

Recorder

• RJ23 6 dots −100°C to +100°C
• RJ25 6 dots −100°C to +200°C

Temperature recorder wiring

Preparation of a power cable, temperature sensor and a grounding wire for recorder installation in the future.

Thermocouple

For measuring specimen temperature
Thermocouple type T (Copper/Copper-Nickel)
• 2 m
• 4 m
• 6 m

Alarm output terminal

If the safety device of the chamber is activated, external alarm terminal will notify it to a remote point.

Emergency stop pushbutton

Stops the chamber immediately.
* Excluding 380V AC.

Caster

Installed for mobility.
4 casters, with leveling feet

⚠ **Safety precautions**

● Do not use specimens which are explosive or flammable, or which contain similar substances. To do so could be hazardous, as this may lead to fire or explosion.

● Do not place corrosive substances in the chamber. If corrosive substances are generated by the specimen, the life of the chamber may be significantly shortened specifically because of the corrosion of stainless steel and copper and because of the deterioration of resin and silicon.

● Do not place living beings or substances that exceed allowable heat generation.

● Be sure to read the user's manual before operation.

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ISO 9001 (JIS Q 9001)
**Quality Management System Assessed
and Registered**

ESPEC CORP. has been assessed by and registered in the Quality Management System based on the International Standard ISO 9001:2015 (JIS Q 9001:2015) through the JSA Solutions Co.,Ltd.

∗ **The organization of these certificates is
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QMS
JIS Q 9001
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MS
CM001

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ISMS
JIS Q 27001
JSAI 165

ISMS-AC
ISMS ISR006

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CM021

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14001
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