

ESPEC

Compact Ultra Low Temperature Chamber

MC-711 • 811



Capable of ultra low temperatures as low as -85°C with our unique instrumentation for program or constant operation.

The Compact Ultra Low Temperature Chamber embodies the high performance, reliability, and durability of a full-size chamber.

The line-up is comprised of a total of four models.

Select either the P-instrumentation for programming temperature cycling or the T-instrumentation for constant operation.

Also choose from two very wide temperature ranges that use environmentally-friendly HFC refrigerants.

Select the best model for your specific application and test objectives.

MC-811



MC-711



* Chambers shown in photo are equipped with options.

Utility

- **Four models available with a choice from two temperature ranges and two types of instrumentation**

The MC-series comes in two temperature ranges of -75 to $+100^{\circ}\text{C}$ / -85 to $+180^{\circ}\text{C}$, and two types of instrumentation for constant or program operation. A wide temperature range supports tests from temperature characteristic tests to low temperature preservation tests.

- **P- and T-instrumentation to meet your test objectives**

P-instrumentation with 6.5-inch TFT color LCD enable easy test setting simply by following the displayed instructions. It offers 10 built-in standard programs, and can store up to 20 program patterns (99 steps per pattern), thus capable of diverse program tests. A wide variety of functions such as trend graph display of operation history, timer, and help support are provided for improved operational ease. T-instrumentation with large 7-segment LED offers constant operation.

- **Accurate PID temperature control**

Just by setting the test temperature, PID control automatically controls temperature, with high accuracy.

- **Ozone-friendly HFC refrigerant**

The refrigerator is loaded with R404A/ R508A HFC refrigerant which is zero ozone depletion potential to protect the global environment.

- **Paperless Recording (optional)**

The paperless recorder makes it easy record the temperatures of different components, such as the chamber temperature, on a memory card (Compact Flash).



Operating panel (Programmable type)



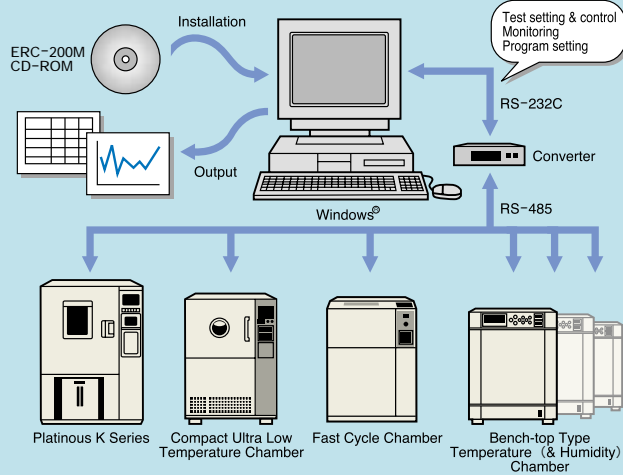
Chamber interior



Paperless recorder (optional) *Sample photo

User-friendly

● Environmental Testing Centralized Control Software (ERC-200M) (sold separately)



Control, monitoring, programming, and datalogging for up to 16 ESPEC chambers can be performed through a single Windows[®] PC, enabling remote operation.

● Remote operation

Have full control of test chambers while sitting in your office.

● Easy datalogging

Stores data to a universal CSV (comma separated value) file. This file can then be used immediately by software like Excel.

● Potential savings

Because the ERC-200M allows program operations to be run directly from the PC, test chambers with less-expensive single-setting controllers can be used.

● E-BUS version available

For existing units with E-BUS system, ERC-100M is available.

● Communication network of Environmental test chambers

The MC Series incorporates the communication port RS-485 as standard to cope with the [E-PILOT 21], which is a newly developed centralized control system. [E-PILOT 21] not only serves as a system for centralized control of environmental chambers, but also establishes an open network including specimen measurement function and remote chamber maintenance function.

● Safety measures

Enough precautions are taken to ensure the safety of operators, specimens and the chamber, with various safety measures such as the leakage breaker and control circuit overload & short circuit protection fuse. In case these safety devices activate, power is shut down to halt chamber operation and details of alarm is displayed on the screen.

● SAFETY DEVICES

- Air circulator temperature switch
- Leakage breaker for power supply (for AC200/220V only)
- Control circuit overload & short circuit protection fuse
- Thermal fuse
- Specimen power supply control terminal (with power cord plug)
- Overheat protector
- Reverse prevention relay
- Refrigerator overload relay
- SSR overload & short circuit protecting circuit breaker
- Compressor temperature switch
- Electric parts compartment door switch
- Refrigerator automatic delay circuit
- Upper and lower temperature limit alarms
- Watchdog timer
- Burn-out circuit

SPECIFICATIONS

| Model | MC-711 | MC-811 | |
|----------------------------|---|--|---|
| Power Supply | 200V AC, 3φ 3W, 50/60Hz 220V AC, 3φ 3W, 60Hz 380V AC, 3φ 4W, 50Hz | | |
| Maximum Current | 12A (8.3A at 380V AC) | 14A (9.2A at 380V AC) | |
| Temperature Control System | Balanced Temperature Control system (BTC system) | | |
| Operating Temperature | 0 to +40°C (+32 to +104°F) | | |
| Performance*1 | Temperature Range | −75 to +100°C (−103 to +212°F) | −85 to +180°C (−121 to +356°F) |
| | Temperature Fluctuation | ±0.5°C (±0.9°F) | |
| | Temperature Uniformity | ±1.0°C (±1.8°F) | ±1.0°C (±1.8°F): at −85 to +100°C (−121 to +212°F) ±2.0°C (±3.6°F): at +100.1 to +180°C (+212.2 to +356°F) |
| | Temperature Heat-up Rate | +20 to +100°C (+68 to +212°F) Approx. 20 min. | +20 to +180°C (+68 to +356°F) Approx. 30 min. |
| | Temperature Pull-Down Rate | +20 to −70°C (+68 to −94°F) Approx. 60 min. | +20 to −80°C (+68 to −112°F) Approx. 70 min. |
| Construction | Material | Exterior | Painted steel (Melamine baked finish) |
| | | Interior | 18-8 Cr-Ni stainless steel plate (2B polish) |
| | | Insulation | Rigid polyurethane foam, glass fiber reinforced plastics and others |
| Heater | Nichrome-stripped wire heater 1kW | | |
| Performance*1 | Refrigeration system | Mechanical cascade refrigeration system (air-cooled condenser) | |
| | Refrigerator | Hermetically sealed compressor (R404A/ R508A) | |
| | Refrigerator capacity | 650W+400W | 800W+650W |
| | Expansion mechanism | Capillary tube system | |
| | Cooler | Plate-fin cooler | |
| Chamber Air Circulator | Propeller fan (φ154mm, 4 blades) | | |
| Fittings | Viewing window (φ120mm with frost prevention heater), Cable port (φ50mm, 1pc), Integrating hour meter, Power cord, Drain tube | | |
| Inside Dimensions | 400W×400H×400D mm (15.7W×15.7H×15.7D in) | | |
| Outside Dimensions*2 | 900W×1200H×610D mm (35.4W×47.2H×24.0D in) | | |
| Inside Capacity | 64L (2.2ft³) | | |
| Weight | 155kg (342 lbs) | | |

*1 At +23°C(+73.4°F) ambient temperature, no specimen.

The performance is according to JTM K 01-1998 of Japan Testing Machinery Association.

*2 Excluding protrusions.



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

● Do not place corrosive materials in the chamber. If corrosive substances or humidifying water is used, the life of the unit may be significantly shortened.



Be sure to read the instruction manual before operation.

■ Some photographs listed in this catalog contain Japanese display.

TEMPERATURE INDICATOR-CONTROLLER

| Model | P-instrumentation (SCP-220) | T-instrumentation (ES-102) |
|-----------------------------------|---|--|
| Operating mode | Program/ Constant operation | Constant operation |
| Display | Color TFT LCD display | 7-segment LED display |
| Setting | Analog touch panel method | Mechanical key input method |
| Program memory capacity | RAM pattern: 20 program patterns (99 steps per pattern) ROM pattern: 10 program patterns | — |
| Setting and indication ranges | Temp. | −85°C to +110°C (MC-711), −95 to +190°C (MC-811) |
| | Time | 0 to 999hrs. 59min. |
| Setting and indication resolution | Temp. | 0.1°C |
| | Time | 1 min. |
| Input | Thermocouple type T (Copper/ Copper-Nickel) | |
| Communication function | RS-485 | |
| Auxiliary functions | Input burn-out detection function, Upper and lower temp. limit alarm function, Self-diagnostic function, Alarm indication function, Power cut protection function, Refrigerator capacity automatic control function, Trend graph indication function (SCP-220), Help function (SCP-220) | |

*1 At +23°C(+73.4°F) ±1°C ambient temperature.

ACCESSORIES

- Shelf (stainless) 2
- Shelf brackets (stainless) 2 sets
- Cable port rubber plug (φ 50mm) 1
- Chamber lamp 1
- Glass tube fuse 2 (200, 220 VAC), 1 (380 VAC)
- Thermal fuse 1
- Plug type fuse (for 380 VAC) 1
- User's manual 1
- Warranty 1

OPTIONS

- Emergency stop switch
- External alarm terminal
- Temperature recorder
- Temperature recorder for future installation
- Communication cable
- Thermocouple
- Power cord (5·10m except 380V AC)
- Shelf / Shelf bracket
- Communication function (E-BUS/ GP-IB/ RS-232C)
- Paperless recorder
- Cable port
- Cable port rubber plug
- Caster

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JIS Q 9001:2000
Registration Number
JSAQ 004



JAB Certificate Number
R001



RE 009



ISO 14001 (JIS Q 14001)

Environmental Management System Assessed and Registered

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ESPEC ENGINEERING CORP.

ESPEC KANSAI CORP.

ESPEC ENVIRONMENTAL TEST

TECHNOLOGY CENTER CORP.

ESPEC BUSINESS CREATE CORP.



051

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 9001:2000 (JIS Q 9001:2000) through the Japanese Standards Association (JSA).

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