Quality is more than a word

ESPEC

Temperature and Humidity Chamber FM Series

Temperature and humidity chamber to fit large specimens

Six different sizes are available as standard, with a test area capacity going from 1,000 to 5,000 liters. Test area modification is available by scale of 50mm to meet customers' requirements.

Wide temperature control range

Model variation offers two types of temperature control range (−40 to +180°C or −70 to +180°C), with or without humidity control (20 to 95%rh).

Great testing space with high-performance control

Even the biggest model (approx. 5,000 L) achieves a temperature rate of change of 3°C/min.
(*See over for the test conditions)

Flexible customization

The chamber features can be adjusted to comply with your test conditions.
(Ex: specimen heat load, temperature rate of change, etc.)

Large viewing window (W340×H440mm)

The chamber is equipped with a large viewing window for easy visual inspection.

User-friendly design with door-mounted operation panel

The instrumentation touch panel offers good visibility and ease of use with graphic display and monitoring functions.

Temperature & Humidity Chamber FM Series

Test area

Custom performance (non-exhaustive)

Rapid temperature change	Averaged temperature rate of change of 5°C/min, 10°C/min, etc. are available.
Rapid specimen temperature change	Increased air flow circulation rises the specimen temperature to reach the test area level.
Heat compensation at low temperature testing	Possibility to test specimen with high heat load under low temperature condition.
Heat compensation for temperature/humidity testing	Possibility to test specimen with high heat load under temperature and humidity conditions.
Lateral viewing window (Large type)	A viewing window mounted on the chamber side can greatly improve inspection possibilities.
Jig for specimens	Several kinds of jig can be supplied to facilitate large specimens' loading and setup.

Specifications

Model	FMU	FML	FMG	FMS
System	Balanced Temperature Control system (BTC system)	Balanced Temperature & Humidity Control system (BTHC system)	Balanced Temperature Control system (BTC system)	Balanced Temperature & Humidity Control system (BTHC system)
Temperature range	−40 to +180°C	−40 to +180°C	−70 to +180°C	−70 to +180°C
Humidity range	——	20 to 95%rh	——	20 to 95%rh
Temperature rate of change	Setting: −40 to +180°C (no specimen, no shelf) −18 ⟷ +158°C at 3°C or more per minute (average)		Setting: −70 to +180°C (no specimen, no shelf) −45 ⟷ +155°C at 3°C or more per minute (average)	

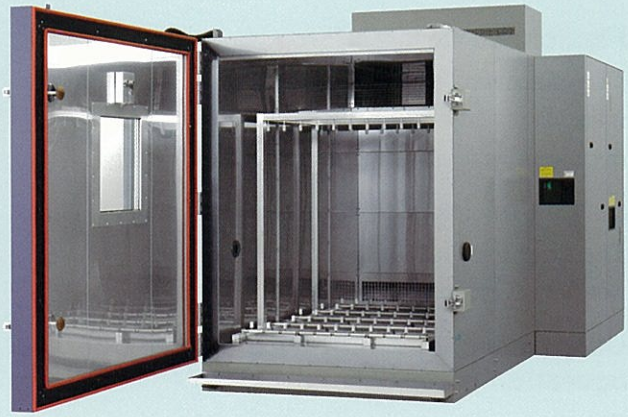
Inside dimensions

Model	1000	1800	2520	3600	3960	5000
W (mm)	1000	1000	1200	1200	1200	1500
H (mm)	1000	1200	1400	1500	1500	1800
D (mm)	1000	1500	1500	2000	2200	1850
Capacity (L)	1000	1800	2520	3600	3960	4995

Case example: Customized chamber for solar battery module

Air flow circulation in the test area is increased so that the module surface reaches a temperature control accuracy of ±2°C, and the humidity accuracy of ±5%rh.*
Special jigs are equipped to ease loading and fixing heavy battery modules in the test area.

* - Specimens:
Battery module 1300×1800×50mm ×10pcs (Total 200kg)
- Temperature measurement point:
On the module surface, the closest to the test area center
- Measured after temperature and humidity are stabilized



<Compatible test standards>

- JIS C-8917 Thermal cycling test A-1
  JIS C-8938 Thermal resistance test B-1
  Moisture resistance test B-2
- IEC61215 (JIS C-8990) 10.11 Thermal cycling test
  10.12 Humidity-freeze test
  10.13 Damp-heat test
- IEC61646 (JIS C-8991) 10.11 Thermal cycling test
  10.12 Humidity-freeze test
  10.13 Damp-heat test

Caution!!

When organic acids like acetic acid, phthalic acid, etc., are generated from the specimens under high temperature and humidity conditions, the following options are recommended:
- Stainless steel evaporator
- Stainless steel drain piping

ESPEC CORP. http://www.espec.co.jp
3-5-6, Tenjinbashi, Kita-ku, Osaka 530-8550, Japan
Tel:+81-6-6358-4785 Fax:+81-6-6358-4786

YF7E23L01 (The contents of this catalog is as of July, 2011.)