Quality is more than a word

ESPEC

Constant Climate Cabinet

LH·LHL·LHU·LU

CAT.NO.E14142

High performance and reliability come in a compact package, for a wide range of temperature/humidity testing needs.

Continuing improvement in the design of constant-temperature (and humidity) cabinets now add ethernet connection, which allows you to control and monitor the cabinet remotely, from a pc via web browser.
The lineup consists of six models, with two size variations, 105 liters and 206 liters, and four temperature/humidity ranges, to accommodate your needs.

LHU-114

LHU-124

Characteristics

Superior stability

With their highly efficient refrigeration system and outstanding thermal insulation, ESPEC's constant climate cabinets are ideal for use in laboratories and research facilities. They offer a wide temperature/humidity range, and create a stable cabinet environment with a temperature gradient/variation in space of temperature 5°C.

Patented cross-output control system reduces required power

The LHU-124 model's cross-output control system (patent No. 2928162) lowers the maximum current during operation, reducing the amount of required power.

Remote monitoring and control (Ethernet connection)

You can connect the cabinet to your local area network. By doing so, you can control and monitor the cabinet 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 cabinets 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 cabinet can be edited via web browser and sampling data can be displayed as graphs. Using the PC application software "Pattern Manager Lite" (see page 3), program patterns on a PC can be edited, displayed as graphs or output as CSV data even if offline.

Control panel / USB memory port

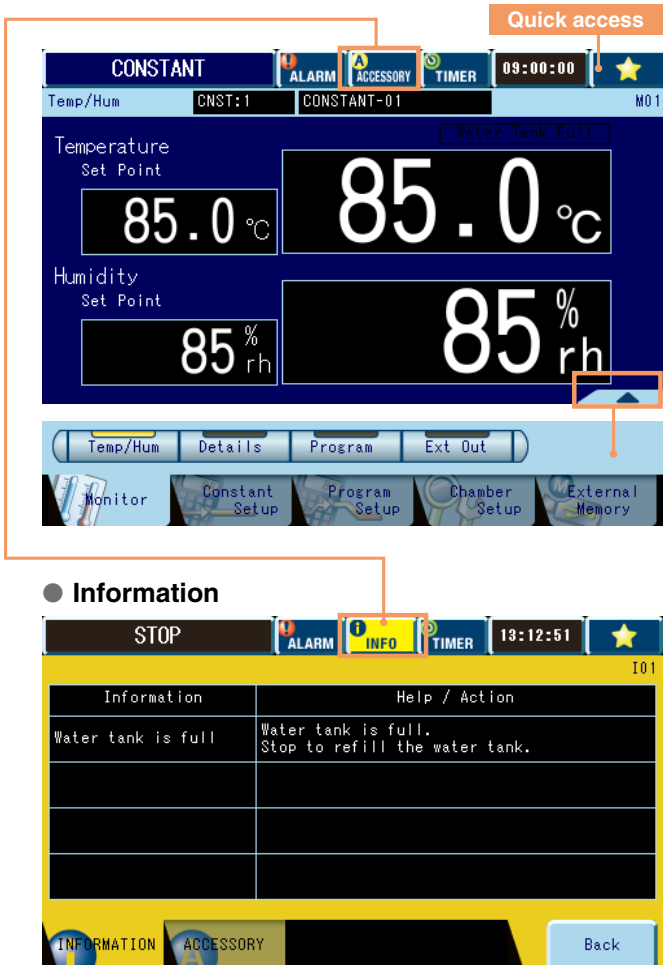
Test area

Web browser

Program editing

Graph display

Characteristics



Easy-to-use instrumentation

Unlike the smartphones, the controller comes with resistive touchscreen, which allows you to operate without taking off your gloves.
Various items, including operation settings and cabinet setup, can be selected with the tabs at the bottom of the screen.

Quick access button

The star mark (★) on the right top corner of the controller can be set to have instant access to any page you often need, either the constant operation start, on else.

Information

When the water tank is full, message "Water tank full" is shown on the operation screen. There are information need to be notified to the operator, the Accessory button will switch to Information button. By pressing the button, you will find notifications such as "Water tank is full", "Check Humidity Tray" and "Check Wet Bulb Wick".

1 pattern 12 steps

The controller allows you to register 3 constant operation settings or 1 program operation setting with maximum of 12 steps.

Download test profiles from Test Navi

ESPEC's reliability test information website, "Test Navi" compiles various test standards used for environmental testing. Download the program patterns of various test standards and copy them to your cabinet, or edit them using the Pattern Manager Lite.*

*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.

N-Instrumentation (LHU-114/124)

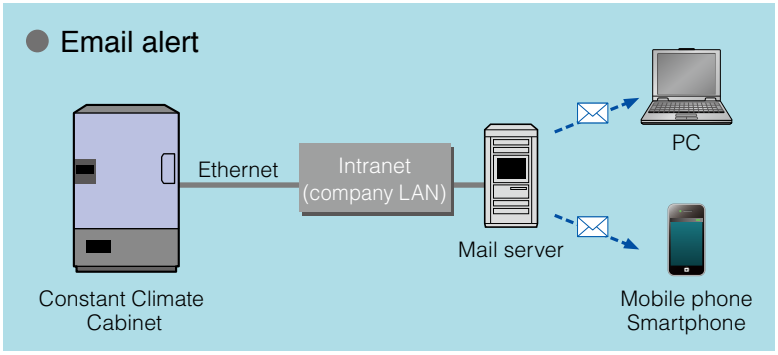
Operating mode	Constant operation, program operation, remote operation, stop
Setting range	• Constant setup 3 patterns Setting range: Temp.: (Lowest attainable temp. –25°C) to (Highest attainable temp. +90°C), 0.1°C unit Humidity: 0 to 100%rh, 1% unit • Program setup 1 pattern (12 steps) Setting range: (Lowest attainable temp. –25°C) to (Highest attainable temp. +90°C), 0.1°C unit Humidity: 0 to 100%rh, 1% unit Time: 0 hour and 1 min. to 9999 hours and 59 min. 1 min. unit
Language	English, Japanese
External memory function	Interface USB 2.0 standard compliant (A-type connector) Supported functions: • Write sampling data, Read/ Write program (application software: Patten Manager Lite) • Backtrace output • Add-ons/system updating
Web function	Interface: Ethernet port (100base-TX) Web applications: monitoring, setting, operation, data recording, maintenance setting, email alert Browser: Windows Internet Explorer 10

Characteristics

Email alert

When an alarm is triggered, an e-mail is sent to the registered PC or mobile address. A notification can also be sent at the time of test completion. Set the recipient mail address from the Maintenance setting screen.

*Requires an intranet environment capable of sending emails.



Test Navi (http://www.test-navi.com/eng/index.html)

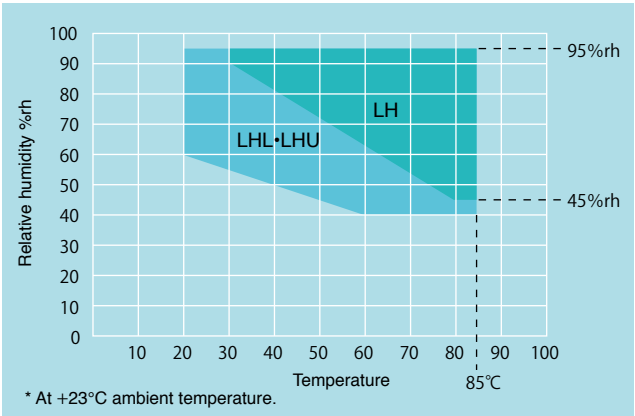
This website provides practical knowledge on environmental testing that ESPEC has acquired through years of experience, as well as covering everything from the fundamentals to the latest information on environmental and reliability testing.

· Updates for cabinet controller software

· Search for environmental test standards

· Download test profiles from a list of environmental test standards

TEMPERATURE & HUMIDITY CONTROL RANGE



NOTE: The LH-114 is not equipped with a dehumidifying refrigerator. Therefore, the temperature and humidity control range, especially the low humidity range shown here, may fluctuate depending on the conditions of installation and environment (such as ventilation, fluctuations in ambient temperature, and other factors).

SAFETY DEVICES

- Leakage breaker for power supply
- Glass tube fuse for control circuit short-circuit protection
- System error (error)
- Room temperature compensation burnout detection circuit
- Dry bulb temperature burnout detection circuit
- Absolute upper/lower temperature limit alarm

(with built-in temperature/ humidity controller)

- Air circulator temperature switch
- Thermal fuse
- Overheat protector
- Wet bulb temperature burnout detection circuit (except LU)
- Refrigerator error detection
- Humidifier dry heat protector (except LU)
- Temperature upper limit deviation alarm

(with built-in temperature/ humidity controller)

- Absolute upper/lower humidity limit alarm

(with built-in temperature/ humidity controller) (except LU)

- System error (alarm)
- Water tank drought switch (except LU)
- Water tank low-level switch (except LU)

SPECIFICATIONS

Model			LH–114	LHL–114	LHU–114	LHU–124	LU–114	LU–124
System			Balanced Temperature & Humidity Control system (BTHC system)				Balanced Temperature Control system (BTC system)	
Performance*1	Temp. (& humid.) control range		(Ambient temp.+10°C/ +50°F) to +85°C/+185°F 45 to 95%rh	+5 to +85°C (+41 to +185°F) 40 to 95%rh	–20 to +85°C (–4 to +185°F) 40 to 95%rh		–20 to +85°C (–4 to +185°F)	
	Temp. (& humid.) fluctuation		±1.0°C / ±5%rh				±1.0°C	
	Temp. gradient		5°C					
	Temp. variation in space		5°C					
	Temp. extreme achievement time (Pull down time)		—		+20 to –20°C within 130 min.			
	Lowest attainable temp.		—		–20°C In an ambient temperature of +5 to +30°C			
Construction	Heater		Sheathed heater with fin					
	Humidifier		Sheathed heater				—	
	Refrigeration unit	System	Mechanical refrigeration system (air-cooled condenser)					
		Cooler	—	Plate fin cooler				
		Refrigerator	—	Hermetically sealed compressor				
		Refrigerant	—	R134A		R404A	R134A	R404A
Fittings			Drain port filter (×2), cable port I.D. ø25 mm on left side, power cable (with 3-pole plug), drain socket, drain hose (except LU), Ethernet port (LAN), USB memory port					
Capacity			105 L			206 L	105 L	206 L
Cabinet total load resistance			30 kg					
Inside dimensions*2 mm			W500 x H600 x D390			W500 H750 D590	W500 H600 D390	W500 H750 D590
Outside dimensions*2 mm			W680 x H1090 x D826			W680 H1240 D1026	W680 H1090 D826	W680 H1240 D1026
Weight			85 kg	95 kg	100 kg	140 kg	90 kg	130 kg
Utility requirements	Allowable ambient conditions		Ambient temperature 0 to +40°C (+32 to +104°F) up to 75%rh					
	Power supply	100V AC 1ø 50/60Hz	15 A			11.7 A	9 A	11.7 A
		115V AC 1ø 60Hz (CE)	13 A			10 A	8 A	10 A
		220V AC 1ø 50/60Hz (CE)	7 A			7 A	4.1 A	7 A
		230V AC 1ø 50/60Hz (CE)	6.5 A			7 A	3.9 A	7 A
	Water supply rate for humidifying tray		40 to 70 ml/ h (at condition +60°C / 95%rh), 100 to 130 ml/ h (at condition +85°C / 95%rh)			40 to 70 ml/ h (at condition +60°C / 95%rh), 100 to 150 ml/ h (at condition +85°C / 95%rh)	—	
	Water quality		Electrical conductivity between 0.1 to 10 µS/cm				—	

*1: The temperature cabinet conforms to IEC60068-3-5:2001, JTM K07:2007 and the humidity cabinet conforms to IEC60068-3-6:2001, JTM K09:2009 under the conditions of an ambient temperature of +23°C, rated voltage, and no specimen.

*2: Excluding protrusions

ACCESSORIES

- Shelf (stainless steel wire) 2
- Shelf bracket (18-8 Cr-Ni stainless steel plate) ..... 2 sets
- Cable port rubber plug ..... 1 (I.D. ø25 mm)
- Water supply/drainage hose (with plug; except LU) 1
- Wet-bulb wick (24 pcs; except LU) ..... 1 box
- Socket adapter (100V, 115V AC spec.only) 1
- Cartridge fuse 1
- User's manual ..... 1 set

OPTIONS

Portable tank

Approx. 18L (not available for LU).

Inner door

Glass door provided inside the cabinet to observe the conditions of the specimens.

Additional cable port

Provided in addition to the standard cable port (left side).

- ø25 mm
- ø50 mm
- ø100 mm

* Cabinet performance may be affected when equipped with a cable port.

Cable port rubber plug

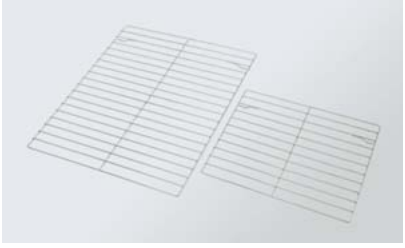
Comes with the cable port.

- for ø25 mm
- for ø50 mm
- for ø100 mm

ø50mm

Shelf/Shelf bracket

Equivalent to standard accessory.



Shelf

*To prevent damage in the event of water leakage, a dew tray (sold separately) can be prepared.

I/O Interface

Communication ports to connect the cabinet to a PC.

- RS-485
- RS-232C
- GPIB

Communication cables

• RS−485	5 m / 10 m / 30 m
• GPIB	2 m / 4 m
• RS−232C	1.5 m / 3 m / 6 m

Recorder output terminal

This terminal outputs the temperature and humidity in the test area.

Thermocouple

Attached to specimen to measure specimen temperature.
Thermocouple type T (Copper/Copper-Nickel)

- 2 m
- 4 m

Specimen power supply control terminal

Shuts off the power to the specimen if an equipment problem occurs while testing the power supply to the specimen.

* When applying voltage to a specimen, be sure to use the specimen power supply control terminal option.

Cabinet stand

Stand designed to facilitate specimen loading/unloading from the test area (except LHU/LU-124).
Size: W750 x H700 x D800 mm

Casters

4 casters, with leveling feet

Safety precautions

- 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 substances in the cabinet. If corrosive substances are generated by the specimen, the life of the cabinet 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 life forms or substances that exceed allowable heat generation.
- Be sure to read the user's manual before operation.

■ Some photographs listed in this catalog contain Japanese display.

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MS JAB CM001

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UKAS MANAGEMENT SYSTEMS 051

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