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6 Allée Emilie du Châtelet
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fax : 02.31.34.55.17

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Parc Club des Tanneries
2 Rue de la Faisanderie
67380 Lingolsheim
tél : 03.88.04.01.81
fax : 03.68.93.01.52

Agence Sud:
Bât Le Venango. 392 Rue Jean Dausset
AGROPARC - BP11575
84916 Avignon Cédex 9
tél : 04.90.27.17.95 fax : 04.90.27.17.52

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Quality is more than a word

ESPEC

Environmental Stress Chamber

AR series
Standard Type

3 YEAR WARRANTY

LOW GWP REFRIGERANT

CAT.NO.E20141-Z2007

Global standard model for a new temperature (&humidity) chamber that meets the needs for high loads, high stresses, and large sizes

The Environmental stress chamber AR series supports heat load and provides faster temperature cycling performance with a wide temperature and humidity control range.

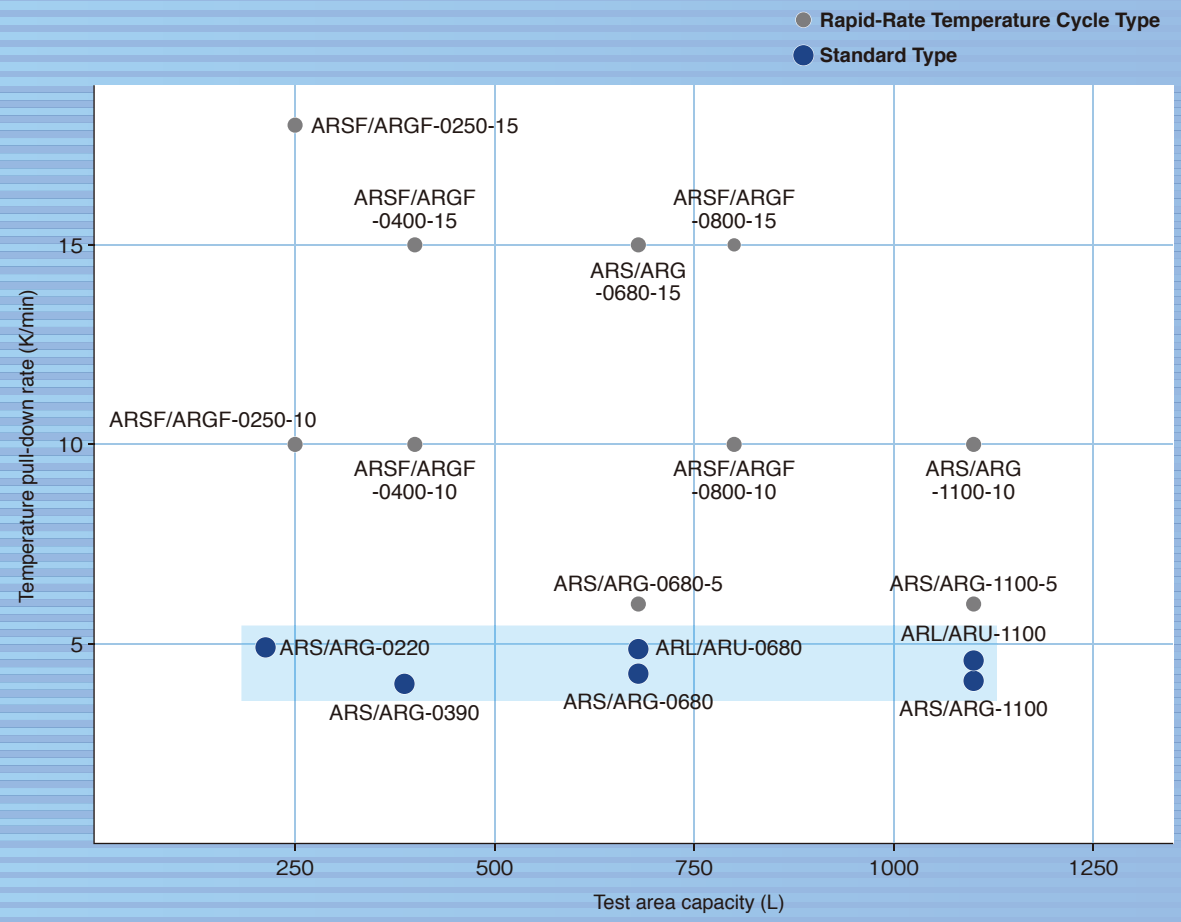
3 YEAR WARRANTY

To minimize our chambers potential environmental impact

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

*R-449A is available on request

AR series Model lineup



* Temp. rate of change according to IEC 60068-3-5

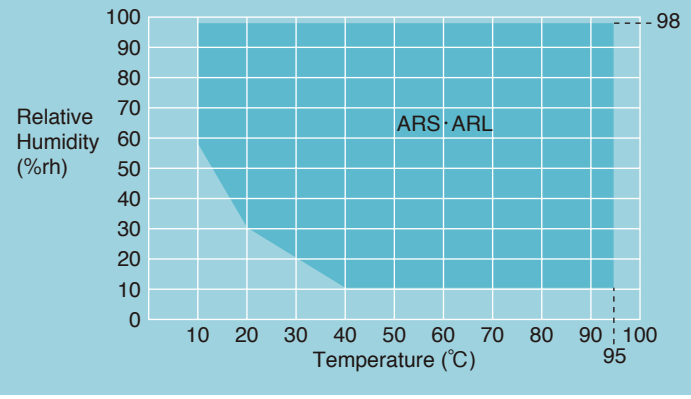
Features

Select from 12 models to meet your test applications

Product images shown may include options.

Temperature & Humidity Control Range

(In environment of ambient temperature of +20°C, no specimen.)



* Continuous operation at or below +40℃ is limited because of frost formation on the cooler and dehumidifier.

Model lineup for standard type

Temp. range	Temp. rate of change		Capacity	Model*
	Heat up rate	Pull down rate		
−75 to +180°C	6.0K /min	5.2K /min	220L	ARS/ARG-0220
	5.0K /min	4.0K /min	390L	ARS/ARG-0390
	6.0K /min	4.2K /min	680L	ARS/ARG-0680
	4.7K /min	4.1K /min	1100L	ARS/ARG-1100
−45 to +180°C	6.3K /min	4.8K /min	680L	ARL/ARU-0680
	4.7K /min	4.4K /min	1100L	ARL/ARU-1100

* ARS/ARL : temperature & humidity
* ARG/ARU : temperature only

Temperature & Humidity Range

Minimum temp.: −45°C/−75°C
Maximum temp.: +180°C
Humid. (ARL/ARS only): 10 to 98%rh

Temperature Change Rate

Approx. 3K/min, with 50kg of specimen*, −75⇔+180°C. (ARS-1100)
This can also be used for acceleration testing.
*Specimen as aluminum, including 12kg of shelf

Specimen Temperature Control

Attaching a temperature measurement sensor to the specimen enables the temperature of the specimen to be monitored and controlled, which makes tests even more accurate.

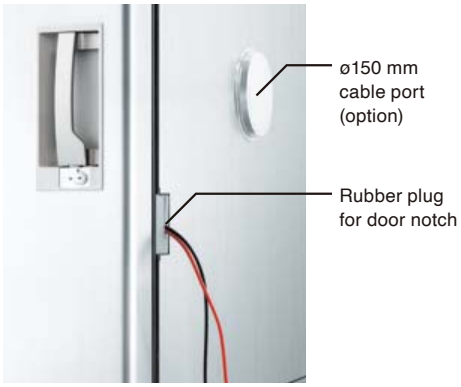
Heat Load up to 4500W

AR series is desirable for testing large heat loads at temperature cycling test and at 85°C/85%rh test.Allowable heat load is different depends on models and operation conditions. (Page 7 to 10)
*For your safety, please be sure to connect the power through specimen power supply control terminal.
*Temperature-triggered circuit breaker is available (customized option).

Features

Easy Access to Specimens

Cable ports are fitted as standard to enable easy access to the inside of the chamber from the left and the right. An even larger ϕ150 mm cable port can be selected or added as an option, while a door notch that enables cable wiring to be routed through the door is also available.



Door notch (option)

Large Viewing Window

A large window option with test area lamp can be added to the door to observe the test sample. The window is heated to prevent moisture and ice build-up.

Size of Viewing Window

W340×H440mm

Global Safety Standards

ISO 12100 (Safety of machinery)
IEC 60204-1(Low voltages)
IEC 61000-6-2, IEC 61000-6-4 (EMC)
EN 50581 (RoHS)
Pressure Equipment Directive
CE marking

3 YEAR WARRANTY

Test area(ARL-0680)

Viewing window (option)

Test Standard Conformance

- IEC 60068-2-1: Cold
- IEC 60068-2-2: Dry heat
- IEC 60068-2-78: Damp heat,steady state
- ISO 16750-4 (5.3): Road vehicles (Temperature cycling)

Controller

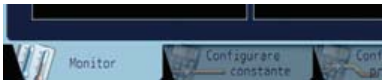
Japanese

French ※

Chinese (simplified)

Hungarian ※

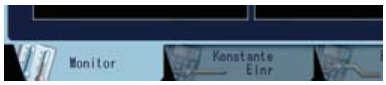
Chinese (traditional)



Romanian ※

Korean

Russian ※

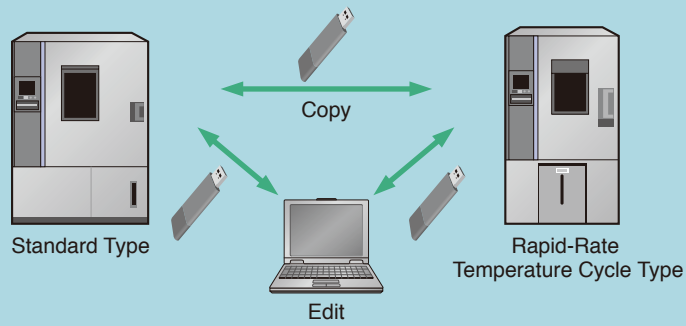


German ※

Czech ※

※ Available on request

Program Copy and Computer Editing



* Some items may not be copied between different models and chambers with different options.

Faster and smoother user interface

The user interface uses tabs for faster access to any screen.
The bright and clear 7" color LCD is easy to read.

Chamber Lamp ON/OFF

The chamber lamp can be switched ON and OFF from all screens.
*Chamber lamp is equipped with viewing window option

Multilingual Support

The language can be changed with the screen settings
(Japanese / English / Chinese (simplified / traditional) / Korean).

Store up to 40 programs

Program operation: 40 patterns (99 steps per program)
Constant operation: 3 patterns

Test Data Records

Temperature & humidity settings and measurement values can be recorded on the internal memory and external memories.

Information Function

The INFO icon will blink when chamber information requiring attention.
・Inspection Period Notifications
It is possible to randomly preset the period and details of inspections for humidifier plates and condenser filters.

Program Pattern Copying

It is possible to copy program patterns between chambers with the use of USB flash drives without the need for PC operations.
(USB flash drives not supplied.)

Network

* Requires an intranet Supported browser: Internet Explorer 11

Chambers Can be Operated from PCs and Tablet Terminals

Remote Monitoring and Control (Ethernet Connection)

The chambers are equipped with unique web applications that enable chamber status to be confirmed and operated from a web browser screen (PC or tablet terminal). It is also possible to start operations with a PC or other device from a remote location.

Editing Test Profiles with a Browser

It is possible to edit the program patterns registered in the testing chamber with a web browser.

Displaying Data in Graphs

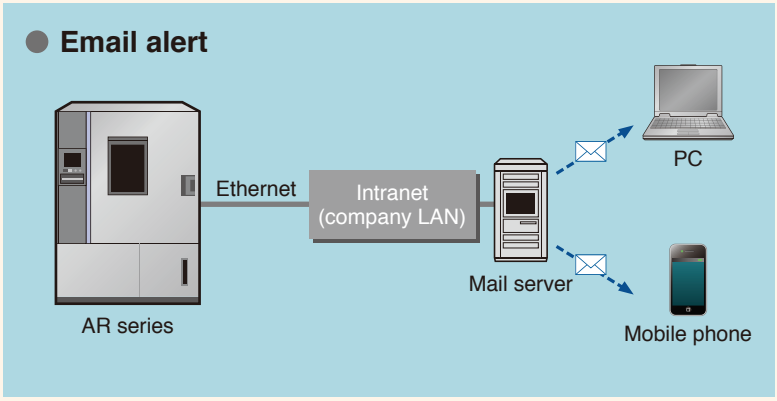
Settings and measurement values saved in the testing chamber can be displayed as graphs on a web browser.

E-mail Notifications

Details on alarms that have been triggered will be sent to pre-registered e-mail addresses. It is also possible to transmit e-mails when testing has finished.

* An Intranet environment is required to transmit e-mails.

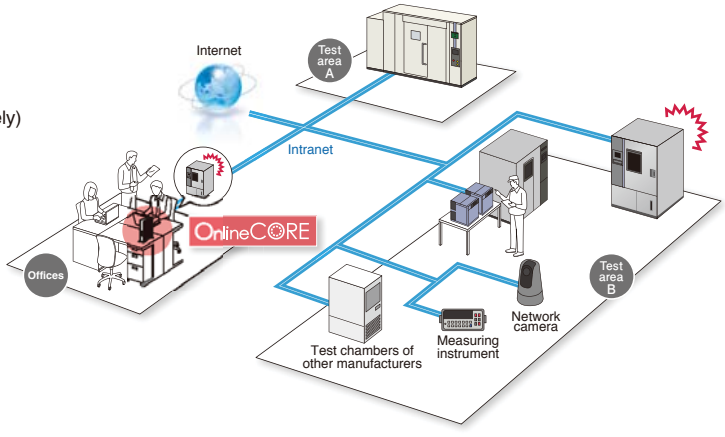
Image



ESPEC OnlineCore

OnlineCORE (Sold separately)

Central control system recommended for multiple environmental test chambers installations



*Please contact ESPEC for more information, about which products can be connected.

ARS

−75 to +180℃ •10 to 98%rh

TEMPERATURE & HUMIDITY CHAMBER

Model			ARS-0220	ARS-0390	ARS-0680	ARS-1100
System			Balanced Temperature & Humidity Control (BTHC) system			
Temp. performance *1	Temp. range		−75 to +180℃ (−103 to +356℉)			
	Temp. fluctuation		±0.3K			
	Temp. variation in space		3.0K			
	Temp. rate of change *2	Heat up rate	6.0 K/min	5.0 K/min	6.0 K/min	4.7K/min
		Pull down rate	5.2 K/min	4.0 K/min	4.2 K/min	4.1K/min
	Temperature extremes achievement time	Heat up time	+20 to +180°C			
			Within 35 min.	Within 45 min.	Within 30 min.	Within 40 min.
		Pull down time	+20 to −75°C			
			Within 40 min.	Within 50 min.	Within 50 min.	Within 50 min.
	Allowable heat load		Test area temperature: +20℃			
			3000 W		4500 W	
Temp. & humid. performance *1	Temp. & humid. range		+10 to +95℃ / 10 to 98% rh			
	Humid. fluctuation		±2.5%rh			
	Allowable heat load		Test area conditions: +25 to +95℃ /90%rh		Test area conditions: +85℃ /85%rh	
			350 W	300 W	500 W	
Construction	Exterior material		18 Cr-stainless steel plate (Hairline finish)			
	Test area material		18-8 Cr-Ni Stainless steel plate (BA finish)			
	Heater		Nichrome strip wire heater			
	Humidifier		Sheathed heater			
	Cooler		Plate fin cooler and dehumidifier			
	Water tank capacity		40L			
	Refrigeration unit	System	Mechanical cascade and compression refrigeration system			
		Condenser	Air-cooled condenser			
		Expansion system	Electronic expansion valve			
		Refrigerant	R-404A [R-449A] *3 R-508A		R-404A [R-449A] *3 R-23	
	Air circulator		Sirocco fan			
Capacity			220 L	390 L	680 L	1100 L
Chamber total load resistance			50 kg	80 kg	80 kg	150 kg
Inside dimensions mm *4			W700×H800×D400	W700×H800×D700	W850×H1000×D800	W1100×H1000×D1000
Outside dimensions mm *4			W900×H1742×D1455	W900×H1742×D1705	W1050×H1955×D1805	W1300×H1955×D2005
Weight			390 kg	405 kg	615 kg	700 kg
Utility requirements	Allowable ambient conditions		0 to +40℃ (+32 to +104℉) / Up to 75%rh			
	Power supply *5	200V AC 3φ50/60Hz	———	———	63 A	70 A
		220V AC 3φ60Hz	38 A	38 A	58 A	64 A
		380V AC 3φ50Hz	24 A	24 A	28 A	32 A
		400V AC 3φ50Hz *6	23 A	23 A	27 A	29 A
Noise level *7			57 dB	58 dB	62 dB	63 dB
Exhaust heat quantity kJ/h (kcal/h)			26600 (6357)	26600 (6357)	39600 (9464)	46800 (11185)

*1: At ambient temperature +20°C, no specimen. Performance shown above conforms to IEC 60068-3-5:2001 and IEC 60068-3-6:2001.
*2: Temperature rate of change in the temperature range excluding ±10% of max/min. temperature.
*3: Available on request
*4: Excluding protrusions.
*5: Power supply voltage fluctuation to be ±10% of rated value.
*6: Conforms to CE marking based on EU directives.
*7: Measurements are to be taken in an anechoic room at a height of 1.2m from the floor and a distance of 1m from the chamber front panel (ISO 1996-1:2003 _ A-weighted sound pressure level).

ARL

−45 to +180℃ •10 to 98%rh

TEMPERATURE & HUMIDITY CHAMBER

Model				ARL-0680	ARL-1100
System				Balanced Temperature & Humidity Control (BTHC) system	
Temp. performance *1	Temp. range			−45 to +180℃ (−49 to +356℉)	
	Temp. fluctuation			±0.3K	
	Temp. variation in space			3.0K	
	Temp. rate of change *2	Heat up rate		6.3 K/min	4.7 K/min
		Pull down rate		4.8 K/min	4.4 K/min
	Temperature extremes achievement time	Heat up time		+20 to +180°C	
				Within 30 min.	Within 40 min.
		Pull down time		+20 to −45°C	
				Within 50 min.	Within 50 min.
	Allowable heat load			Test area temperature: +20℃ 4500 W	
Temp. & humid. performance *1	Temp. & humid. range			+10 to +95℃ / 10 to 98%rh	
	Humid. fluctuation			±2.5%rh	
	Allowable heat load			Test area conditions: +85℃ /85%rh 500 W	
Construction	Exterior material			18 Cr-stainless steel plate (Hairline finish)	
	Test area material			18-8 Cr-Ni Stainless steel plate (BA finish)	
	Heater			Nichrome strip wire heater	
	Humidifier			Sheathed heater	
	Cooler			Plate fin cooler and dehumidifier	
	Water tank capacity			40L	
	Refrigeration unit	System		Mechanical single-stage refrigeration system	
		Condenser		Air-cooled condenser	
		Expansion system		Electronic expansion valve	
		Refrigerant		R-404A [R-449A] *3	
	Air circulator			Sirocco fan	
Capacity				680 L	1100 L
Chamber total load resistance				80 kg	150 kg
Inside dimensions mm *4				W850×H1000×D800	W1100×H1000×D1000
Outside dimensions mm *4				W1050×H1955×D1805	W1300×H1955×D2005
Weight				510 kg	600 kg
Utility requirements	Allowable ambient conditions			0 to +40℃ (+32 to +104℉) / Up to 75%rh	
	Power supply *5	200V AC 3φ50/60Hz		53 A	56 A
		220V AC 3φ60Hz		49 A	52 A
		380V AC 3φ50Hz		23 A	25 A
		400V AC 3φ50Hz *6		22 A	23 A
Noise level *7				61 dB	62 dB
Exhaust heat quantity kJ/h (kcal/h)				32400 (7743)	39600 (9464)

*1: At ambient temperature +20℃, no specimen. Performance shown above conforms to IEC 60068-3-5:2001 and IEC 60068-3-6:2001.
*2: Temperature rate of change in the temperature range excluding ±10% of max/min. temperature.
*3: Available on request
*4: Excluding protrusions.
*5: Power supply voltage fluctuation to be ±10% of rated value.
*6: Conforms to CE marking based on EU directives.
*7: Measurements are to be taken in an anechoic room at a height of 1.2m from the floor and a distance of 1m from the chamber front panel (ISO 1996-1:2003 _ A-weighted sound pressure level).

ARG

−75 to +180℃
TEMPERATURE CHAMBER

Model				ARG-0220	ARG-0390	ARG-0680	ARG-1100
System				Balanced Temperature Control (BTC) system			
Temp. performance *1	Temp. range			−75 to +180℃ (−103 to +356℉)			
	Temp. fluctuation			±0.3 K			
	Temp. variation in space			3.0 K			
	Temp. rate of change *2		Heat up rate	6.0 K/min	5.0 K/min	6.0 K/min	4.7K/min
			Pull down rate	5.2 K/min	4.0 K/min	4.2 K/min	4.1K/min
	Temperature extremes achievement time		Heat up time	+20 to +180°C			
				Within 35 min.	Within 45 min.	Within 35 min.	Within 45 min.
			Pull down time	+20 to −75°C			
				Within 40 min.	Within 50 min.	Within 50 min.	Within 50 min.
	Allowable heat load			Test area temperature: +20℃			
				3000 W		4500 W	
Construction	Exterior material			18 Cr-stainless steel plate (Hairline finish)			
	Test area material			18-8 Cr-Ni Stainless steel plate (BA finish)			
	Heater			Nichrome strip wire heater			
	Cooler			Plate fin cooler			
	Refrigeration unit	System		Mechanical cascade refrigeration system			
		Condenser		Air-cooled condenser			
		Expansion system		Electronic expansion valve			
		Refrigerant		R-404A [R-449A] *3 R-508A		R-404A [R-449A] *3 R-23	
	Air circulator			Sirocco fan			
Capacity				220 L	390 L	680 L	1100 L
Chamber total load resistance				50 kg	80 kg	80 kg	150 kg
Inside dimensions mm *4				W700×H800×D400	W700×H800×D700	W850×H1000×D800	W1100×H1000×D1000
Outside dimensions mm *3				W900×H1742×D1455	W900×H1742×D1705	W1050×H1955×D1805	W1300×H1955×D2005
Weight				385 kg	400 kg	615 kg	700 kg
Utility requirements	Allowable ambient conditions			0 to +40℃ (+32 to +104℉) / Up to 75%rh			
	Power supply *5	200V AC 3φ50/60Hz		———	———	63 A	70 A
		220V AC 3φ60Hz		38 A	38 A	58 A	64 A
		380V AC 3φ50Hz		24 A	24 A	28 A	32 A
		400V AC 3φ50Hz *6		23 A	23 A	27 A	29 A
Noise level *7				57 dB	58 dB	62 dB	63 dB
Exhaust heat quantity kJ/h (kcal/h)				26600 (6357)	26600 (6357)	39600 (9464)	46800 (11185)

*1: At ambient temperature +20℃, no specimen. Performance shown above conforms to IEC 60068-3-5:2001.
*2: Temperature rate of change in the temperature range excluding ±10% of max/min. temperature.
*3: Available on request
*4: Excluding protrusions.
*5: Power supply voltage fluctuation to be ±10% of rated value.
*6: Conforms to CE marking based on EU directives.
*7: Measurements are to be taken in an anechoic room at a height of 1.2m from the floor and a distance of 1m from the chamber front panel (ISO 1996-1:2003 _ A-weighted sound pressure level).

ARU

−45 to +180℃

TEMPERATURE CHAMBER

Model				ARU-0680	ARU-1100
System				Balanced Temperature Control (BTC) system	
Temp. performance *1	Temp. range			−45 to +180℃ (−49 to +356˚F)	
	Temp. fluctuation			±0.3 K	
	Temp. variation in space			3.0 K	
	Temp. rate of change *2	Heat up rate		6.3 K/min	4.7 K/min
		Pull down rate		4.8 K/min	4.4 K/min
	Temperature extremes achievement time	Heat up time		+20 to +180°C	
				Within 30 min.	Within 40 min.
		Pull down time		+20 to −45°C	
				Within 50 min.	Within 50 min.
	Allowable heat load			Test area temperature: +20℃ 4500 W	
Construction	Exterior material			18 Cr-stainless steel plate (Hairline finish)	
	Test area material			18-8 Cr-Ni Stainless steel plate (BA finish)	
	Heater			Nichrome strip wire heater	
	Cooler			Plate fin cooler	
	Refrigeration unit	System		Mechanical single-stage refrigeration system	
		Condenser		Air-cooled condenser	
		Expansion system		Electronic expansion valve	
		Refrigerant		R-404A [R-449A] *3	
	Air circulator			Sirocco fan	
Capacity				680 L	1100 L
Chamber total load resistance				80 kg	150 kg
Inside dimensions mm *4				W850×H1000×D800	W1100×H1000×D1000
Outside dimensions mm *4				W1050×H1955×D1805	W1300×H1955×D2005
Weight				505 kg	595 kg
Utility requirements	Allowable ambient conditions			0 to +40℃ (+32 to +104˚F) / Up to 75%rh	
	Power supply *5	200V AC 3φ50/60Hz		53 A	56 A
		220V AC 3φ60Hz		49 A	52 A
		380V AC 3φ50Hz		49 A	25 A
		400V AC 3φ50Hz *6		22 A	23 A
Noise level *7				61 dB	62 dB
Exhaust heat quantity kJ/h (kcal/h)				32400 (7743)	39600 (9464)

*1: At ambient temperature +20℃, no specimen. Performance shown above conforms to IEC 60068-3-5:2001.
*2: Temperature rate of change in the temperature range excluding ±10% of max/min. temperature.
*3: Available on request
*4: Excluding protrusions.
*5: Power supply voltage fluctuation to be ±10% of rated value.
*6: Conforms to CE marking based on EU directives.
*7: Measurements are to be taken in an anechoic room at a height of 1.2m from the floor and a distance of 1m from the chamber front panel (ISO 1996-1:2003 _ A-weighted sound pressure level).

Options

Power cable

- 2.5 m
- 5 m
- 10m

* A power cable is not equipped as standard.

Continuous water supply

A water circuit to supply pure water continuously to the chamber.

- Pure water coupling with pressure-reducing valve

Pure water coupling
(with pressure-reducing valve)

	Pure Water Coupling
	With Pressure-Reducing Valve
Water pressure	0.05 to 0.50MPa (Gauge)
Conductivity	0.1 to 10μS/cm
Connectable items	Only a steel pipe (or a PVC pipe) can be connected.

* Water supplier shall be connected by the customer.

Water purifier (WS-1)

Use to continuously supply pure water.
Produced water capacity: 12 L/h
(Water temperature: 25℃)
Size: W480×H400×D280 mm (20kg)

Water leak detection system and dew tray to catch dripping water are also available to detect and prevent water damages.

Viewing window

Used for observation of the specimens inside the chamber.
Dimensions: W340×H440 mm

Additional cable port/Door notch

- ø50mm
- ø100mm
- ø150mm
- Door notch H100×D50mm

* Each cable port is equipped with a silicone sponge rubber plug.

ø50mm

Door notch

Cable port rubber plug

- ø50mm
- ø100mm
- ø150mm
- With slits ø50mm
- With slits ø100mm
- With slits ø150mm
- Spiral-wrapped plug (5×50×2000mm)
- For door notch

ø50 mm

With slits ø150 mm

Spiral-wrapped type

Shelf/shelf bracket

The same with standard accessory.

Heavy-duty shelf

Used to hold heavy specimens exceeding the load capacity of the standard shelf.

- Load capacity: 50kg

Model	0220	0390	0680
Floor load resistance (kg)	50	80	80
Support strength (kg)	50	80	80
Weight / shelf (kg)	3	4	8

Floor reinforcement

Increase the floor load capacity of test area.
Up to

- 100 kg
- 200 kg
- 300 kg

Computer interface

- RS-485
- GPIB
- RS-232C

Communication cables

- RS-485 5m/ 10m/ 30m
- GPIB 2m/ 4m

Wet bulb wick

Consumable spares for wet bulb wick (standard accessories).

Fine wick FW-5 (24 wicks)

Options

Paperless recorder

A temperature & humidity 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)
< Temperature & humidity type >
No. of input channel:
Temperature 1, Humidity 1
(4 more channels can be turned ON)

Temperature (humidity) recorder

Recording method: Dot
Chart paper: Effective width 100 mm
No. of inputs:
< Temperature & humidity type >
Temperature 5, Humidity 1
−100 to +200℃/0 to 100%rh
< Temperature type >
Temperature 6
−100 to +200℃

Time signal terminal

Adds additional terminals to the standard time signal terminals.
(Standard : 2 terminals ➡ 10 terminals)

Thermocouple

Attached to specimen to measure specimen temperature.
Thermocouple with a brass ball tip
Thermocouple type T (Copper/Copper-Nickel)
- 2 m
- 4 m
- 6 m

Additional overheat protector

Additional preventive measures can be taken for excessive temperature rise in the chamber, in addition to the standard equipped overheat protector.

Overcool protector

If the temperature inside the chamber decreases excessively, the chamber stops operating to prevent the specimens from being damaged.

Alarm output terminal

If the safety device of the chamber is activated, alarm signal will be sent to remote location through this terminal.
Signal: terminal is closed on abnormal situation
Accessory: plug
Location: in the control board
*The circuit shall be connected by customer.

Status indicator light

Please select lighted or blinking, and requirement of buzzer sound.
No. of levels: 1 Heigh: 214 mm
No. of levels: 2 Heigh: 254 mm
No. of levels: 3 Heigh: 294 mm
No. of levels: 4 Heigh: 334 mm

Emergency stop pushbutton

Stops the chamber immediately.

380V AC, 400V AC spec.

Chamber dew tray

Prevents water leaks from the chamber onto the floor.

Image

Operation manual

- CD
- Booklet

Reports & certificates

- Testing and inspection report
- Test data
- Temperature (& humidity) uniformity measurement
- Calibration report
- Calibration certificate
- Traceability certificate
- Traceability system chart

AR Series Options

Standard type

Options	✔	ARS/ARL Temperature & humidity chamber				ARG/ARU Temperature chamber			
		0220	0390	0680	1100	0220	0390	0680	1100
Power cable	☐	●	●	●	●	●	●	●	●
Continuous water supply with pressure-reducing valve	☐	●	●	●	●	—	—	—	—
Water purifier WS–1	☐	●	●	●	●	—	—	—	—
Viewing window	☐	●	●	●	●	●	●	●	●
Additional cable port	☐	●	●	●	●	●	●	●	●
Door notch	☐	●	●	●	●	●	●	●	●
Cable port rubber plug	☐	●	●	●	●	●	●	●	●
Shelf/shelf bracket	☐	●	●	●	●	●	●	●	●
Heavy-duty shelf Up to 50kg	☐	●	●	●	standard	●	●	●	standard
Floor reinforcement	☐	—	●	●	●	—	●	●	●
Computer interface	☐	●	●	●	●	●	●	●	●
Communication cables	☐	●	●	●	●	●	●	●	●
Wet bulb wick	☐	●	●	●	●	—	—	—	—
Paperless recorder Portable	☐	●	●	●	●	●	●	●	●
Built-in	☐	●	●	●	●	●	●	●	●
Temperature (humidity) recorder Portable	☐	●	●	●	●	●	●	●	●
Built-in	☐	●	●	●	●	●	●	●	●
Time signal terminal	☐	●	●	●	●	●	●	●	●
Thermocouple	☐	●	●	●	●	●	●	●	●
Additional overheat protector	☐	●	●	●	●	●	●	●	●
Overcool protector	☐	●	●	●	●	●	●	●	●
Alarm output terminal	☐	●	●	●	●	●	●	●	●
Status indicator light	☐	●	●	●	●	●	●	●	●
Emergency stop pushbutton	☐	●	●	●	●	●	●	●	●
Chamber dew tray	☐	●	●	●	●	●	●	●	●
Operation manual	☐	●	●	●	●	●	●	●	●
Reports & certificates	☐	●	●	●	●	●	●	●	●

Safety precautions

- Do not use specimens which are explosive or flammable, 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 liquid is used, the life of the unit may be significantly shortened specifically because of the corrosion of stainless steel, resin and silicone materials.
- Do not use living organisms or items that exceed the allowable heat load as a specimen.
- Be sure to read the operation manual before operation.

Please contact us for non-standard specification.

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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.

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