

Quality is more than a word

ESPEC

# Environmental Stress Chamber

AR series

Rapid-Rate Temperature Cycle Type / Standard Type



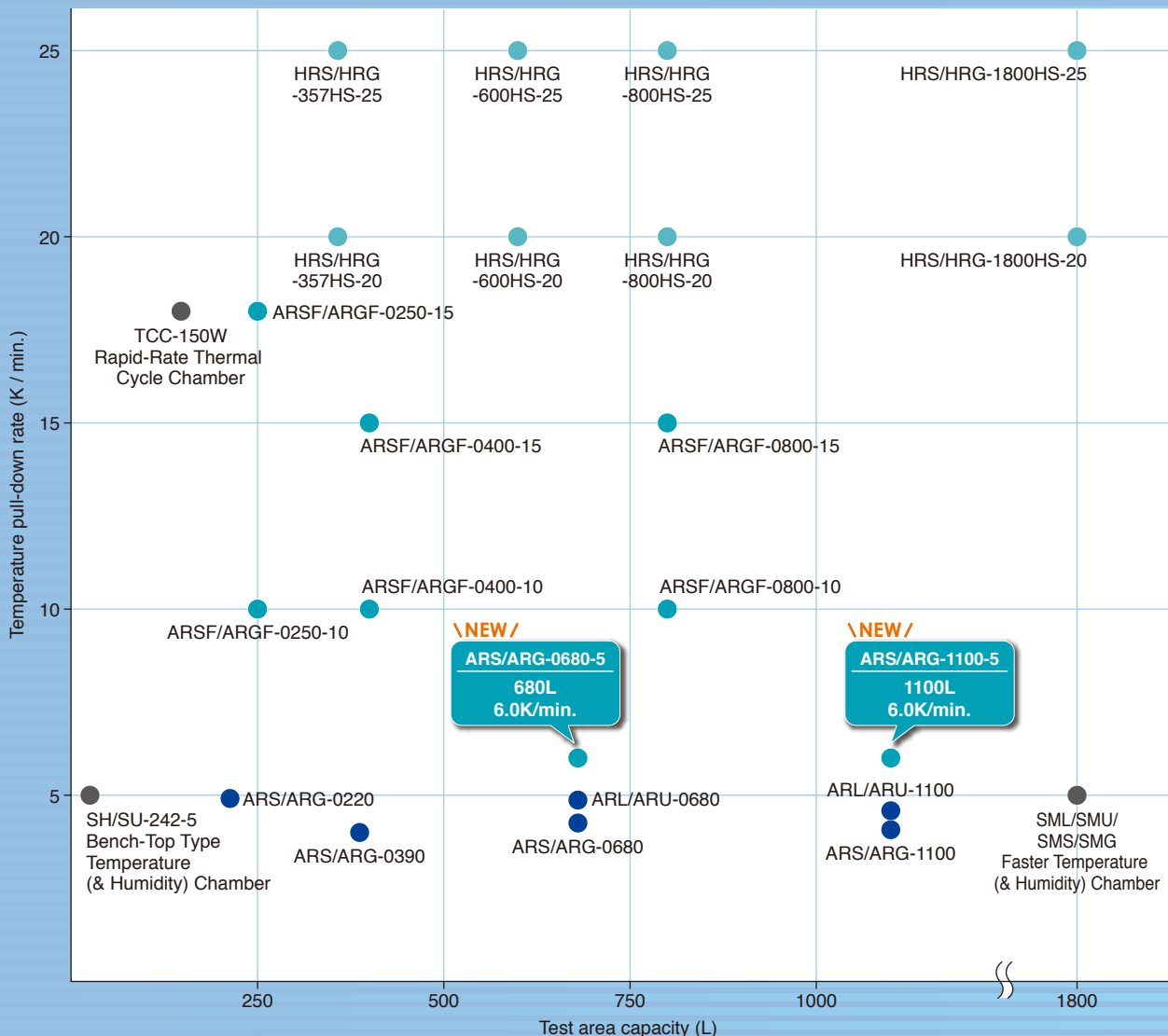
**3 year warranty**

# Introducing a temperature change rate of 5K/min. model to the rapid-rate temperature cycle type

The Environmental stress chamber AR series supports heat load and provides faster temperature cycling performance with a wide temperature and humidity control range. Customers can select the optimal model for their needs based on performance and test area capacity. A chamber is now available that achieves a temperature change rate of 5K/min. for specimens that comply with IEC 60068-2-14Nb/2-30/2-38. A lineup is available that includes models with a temperature change rate of up to 25K/min. Take benefit of AR series with low-GWP (Global Warming Potential) refrigerant, as well as a 3-year warranty.

## Wide range of models in a variety of sizes and performance

- Rapid-Rate Temperature Cycle Type
- Standard Type



## To minimize our chambers potential environmental impact

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



\*R-449A is available on request

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# Features

## Rapid-Rate Temperature Cycle Type

### ● Test Standard Conformance

- IEC 60068-2-1: Cold
- IEC 60068-2-2: Dry heat
- IEC 60068-2-14Nb: Change of temperature with specified rate of change
- IEC 60068-2-30: Damp heat, cyclic
- IEC 60068-2-38: Composit temperature/humidity cyclic test
- IEC 60068-2-78: Damp heat, steady state
- ISO 16750-4 (5.3): Road vehicles (Temperature cycling)

\* Some models do not conform to the standard depending on test conditions. For further information, please contact ESPEC.

### ● Temperature & Humidity Range

Minimum temp.: -70°C  
 Maximum temp.: +180°C  
 Humid. (ARSF/ARS only): 10 to 98%rh

**\NEW/**  
 Testing at a high temperature range of +200°C is also possible.

\* Specific parts shall be subject to replacement depending on operation duration and condition within the warranty period.

### Model lineup Rapid-rate temperature Cycle type

Model *	Capacity	Temp. range	Temp. rate of change -45⇔+155°C	
ARSF/ARGF	-0250-15	249L	-70 to +180°C	18K/min.
	-0400-15	398L		15K/min.
	-0800-15	784L		10K/min.
	-0250-10	249L		
	-0400-10	398L		
	-0800-10	784L		
ARS/ARG	-0680-5	680L	-70 to +180°C	6K/min. <b>\NEW/</b>
	-1100-5	1100L		

\* ARSF/ARS: temperature & humidity, ARGF/ARG: temperature only

### ● Totally Frost-Free

Frosting will not appear on any part of the unit despite the temperature & humidity control range of range from 10 to 98%rh. Eradicating the need to remove frosting provides stable and continuous operations.

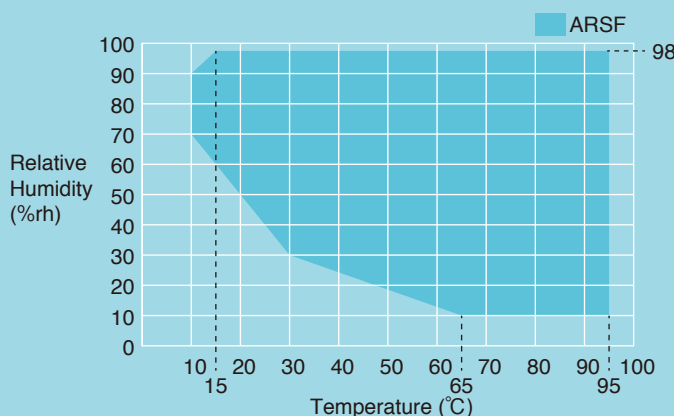
### ● Door handle lock with key

Door handle lock prevents the chamber door from opening during a test. Also the key is equipped to ensures additional security to protect testing and specimen.



### ● Temperature & Humidity Control Range

(In environment of ambient temperature of +23°C, no specimen.)



\* Totally frost free, no limitation of continuous operation.

### ● Global Safety Standards

ISO 12100 (Safety of machinery)  
 ISO 14121 (Risk assessment)  
 IEC 61000-6-2, IEC 61000-6-4 (EMC)  
 EN 50581 (RoHS)  
 CE marking (For marked models and power voltage, see page 7, 10 and 11.)

**3 year warranty**

**\NEW/**

# Features

## Complies with IEC 60068-2-14Nb/2-30/2-38

## 5K/min. chamber that supports testing standards for automotive parts and components

### ● Performs 5K/min. with specimens

Testing that requires a temperature change rate of 5°C/min. at -40°C to +125°C can be performed with specimens.

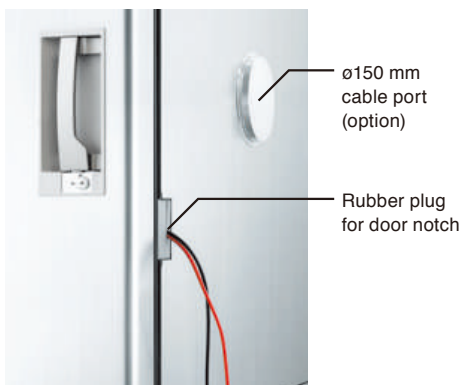
### ● Line up

Four models in two sizes (680L/1100L) with either temperature type or temperature and humidity type are available.

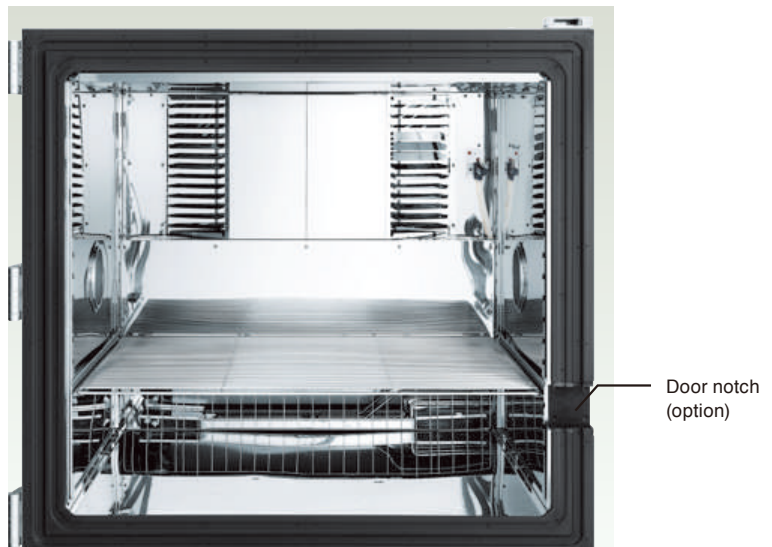


### ● Easy Access to Specimens

ø100mm 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 ø150 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)



Inside of the ARS-1100-5 chamber

### ● The chamber lamp provides an clear and efficient view of the interior.



Product images shown may include options, including those on the cover.

# Features

Rapid-Rate Temperature Cycle Type

5K/min.

10K/min.

15K/min.

20K/min.

25K/min.

Standard Type



ARSF-0250-15    ARSF-0400-15    ARSF-0800-15



Inside of the ARSF-0800 chamber



Viewing window

### Size of Viewing Window

ARSF/ARGF-0250/0400: W180xH260mm  
ARSF/ARGF-0800: W295xH380mm

## ● Temperature Change Rate

Three variations: 10K/min., 15K/min. and 18K/min. between  $-45^{\circ}\text{C} \Leftrightarrow +155^{\circ}\text{C}$ . Perfect for tests in conformance with IEC and other official standards, as well as automotive part standards.

## ● Heat Load up to 9000W

Heat compensation at  $+20^{\circ}\text{C}$  is up to 9000 W (ARGF/ARSF-0800-15) (Page 7, 10 and 11)

\* Refer to Page 7, 10 and 11 for allowable heat load of each model.

\*For your safety, please be sure to connect the power through specimen power supply control terminal.

\*Temperature-triggered circuit breaker is available (customized option).

## ● High-Accuracy Temperature & Humidity Control

Temperature and humidity is stable as well as during constant operation as during gradient operation. Temperature and humidity is stable not only during constant operation but also testing with ramp control setting. As a result, strict temperature & humidity cycle testing such as IEC 60068-2-30 can be performed.

## ● Energy-Saving with Dual PID Control

Dual PID Control (Proportional-Integral-Differential: control that enables the segmentation of refrigeration capacity) mostly controls only the refrigerator at  $0^{\circ}\text{C}$  or lower, thereby saving energy.

## ● $\varnothing 50\text{mm}$ Cable Ports on Both Sides

Equipped with  $\varnothing 50\text{mm}$  cable ports on both right and left sides as standard. 100mm, 150mm or ports with other diameters can also be added or modified on an optional basis, and it is also possible to arrange for door notches (P.4) in order to enable specimen cables or other apparatus to be installed within the chamber.

## ● Viewing Windows as Standard

Equipped with viewing windows as standard, and chamber lamp (LED lamps) provide greater visibility.

# Controller

## High-resolution/high-speed processing touch panel

### Color LCD Touch Panel

Easy-to-see TFT color LCD. Tabs are displayed at the bottom of the screen that make it easy to call up other screens.

### Multilingual Support

The language used by the instrumentation can be changed with the screen settings (Japanese / English / Chinese (simplified / traditional) / Korean / German / French).

### 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.
- Inspection Notifications  
When the monitoring value goes over the threshold, this notifications encourage inspection.  
Monitor objects:  
compressor amperage & condenser cooling-water temperature.

### Registering Test Patterns

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

### Temp. rate of change input available (Patent pending) \NEW/

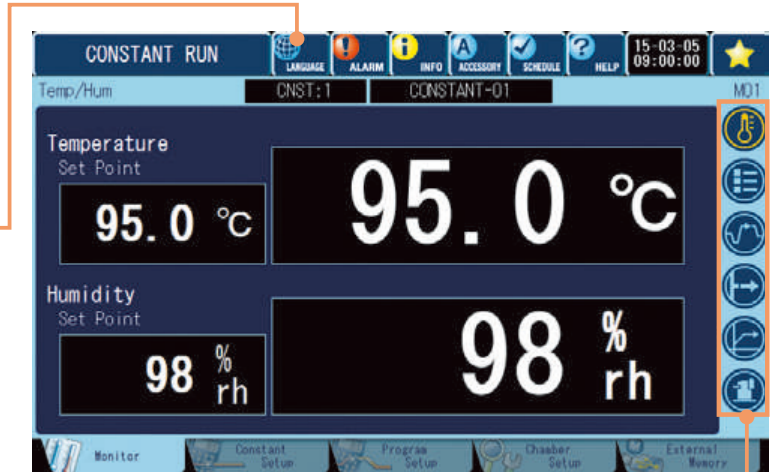
The step time can be calculated automatically just by inputting the temperature change rate (first decimal point) using gradient control settings.

### Test Data Records

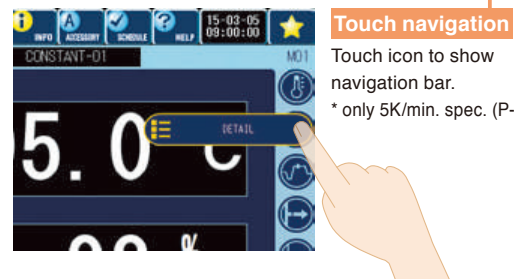
Temperature & humidity settings and measurement values can be recorded on the internal memory and external memories.

### 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.)

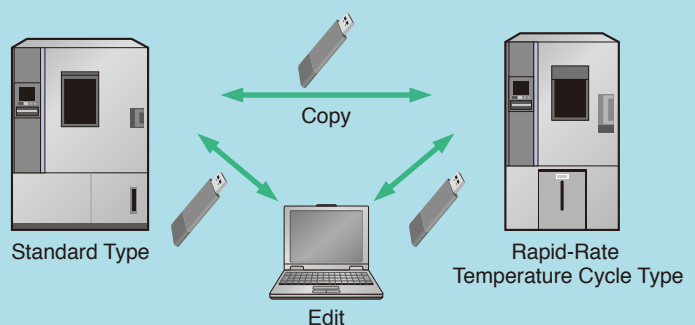


\*The instrumentation screen is a 5K/min. spec. (P-310)



\*The instrumentation screen is a 5K/min. spec. (P-310)

### Program Copy and Computer Editing



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

**New**

**ARS·ARG**

**-70~+180°C (•10~98%rh)**

**TEMPERATURE (& HUMIDITY) CHAMBER**

Model	ARS-0680-5	ARS-1100-5	ARG-0680-5	ARG-1100-5	
System	Balanced Temperature & Humidity Control (BTHC) system		Balanced Temperature Control system (BTC) system		
Temp. performance <sup>*1</sup>	Temperature range	-70 to +180°C (-94 to +356°F)			
	Temperature fluctuation	±0.3K			
	Temperature variation in space	-70 to +150°C: 1.5K, +150.1 to +180°C: 2.0K			
	Temp. rate of change	Heat up rate	6K/min.		
		Pull down rate	6K/min.		
	Temperature extremes achievement time	Heat up time	+20°C to +180°C 40 min.		
		Pull down time	+20°C to -70°C 40 min.		
Allowable heat load	Test area temperature: +20°C				
Temp. & humid. performance <sup>*1</sup>	Temp. & humid. range	+10 to 95°C / 10 to 98%rh		————	
	Humid. fluctuation	±2.5%rh		————	
	Allowable heat load	Test area conditions: +85°C / 85%rh 500W		————	
Exterior material	Stainless steel plate: 18 Cr stainless steel plate, hairline finish				
Test area material	Stainless steel plate: 18-8 Cr-Ni stainless steel plate, BA polish				
Heater	Nichrome strip wire heater				
Humidifier	Sheathed heater				
Cooler / Dehumidifier	Plate fin cooler				
Water tank capacity	40L (20Lx2)		————		
Refrigerator	System	Mechanical cascade refrigeration			
	Compressor	Scroll-type			
	Condenser	Water-cooled condenser			
	Expansion system	Electronic expansion valve			
	Refrigerant \NEW/	R449A/R508A			
Capacity	680L	1100L	680L	1100L	
Chamber total load capacity	680L: 80kg (shelf support pole: 80kg, floor: 80kg) 1100L: 150kg (shelf support pole: 100kg, floor: 150kg)				
Inside dimensions mm <sup>*2</sup>	W850×H1000×D800	W1100×H1000×D1000	W850×H1000×D800	W1100×H1000×D1000	
Outside dimensions mm <sup>*2</sup>	W1050×H1955×D2255	W1300×H1955×D2455	W1050×H1955×D2255	W1300×H1955×D2455	
Weight	780kg	900kg	770kg	890kg	
Utility requirements	Ambient conditions	0 to +40°C (+32 to +104°F) / 75%rh max.			
	Power supply (selectable)	220V AC 3φ60Hz <sup>*3</sup>	55A	77A	55A
		380V AC 3φ50Hz <sup>*3</sup>	30A	33A	30A
		400V AC 3φ50Hz <sup>*3</sup>	30A	32A	30A
Cooling water flow rate (Reference water temp.+25°C)	2000L/h	2700L/h	2000L/h	2700L/h	
Noise level <sup>*4</sup>	58dB	61dB	58dB	61dB	

\*1: The performance values are based on IEC60068-3-5:2001 and IEC60068-3-6:2001; Performance figures are given for a +23°C, ambient temperature relative humidity of 65±20%rh, rated voltage, and no specimen inside the test area.

\*2: Dimensions do not include protrusions.

\*3: Conforms to CE marking based on EU directives.

\*4: Measured in anechoic room. Measurement points set 1m apart from the front of the chamber, and 1.2m above the floor (in compliance with JIS-Z-8731:1999 A-weighted sound pressure level).



# Options

## Power cable

- 2.5 m
  - 5 m
  - 10m
- \* Not mounted 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)

Water pressure	0.05 to 0.50MPa (Gauge)
Conductivity	0.1 to 10µS/cm
Location	Lower rear side
Connectable items	Only a steel pipe (or a PVC pipe) can be connected.

\* Water supplier shall be connected by the customer.

Water leak detection system and dew tray (P9) to catch dripping water are also available to detect and prevent water damages.

## Shelf, shelf bracket

The same with standard accessory.



Model	0680	1100
Shelf size (mm)	W817 D750	W1067 D950
Shelf weight	6kg	12kg
Shelf load capacity (evenly distributed load)	40kg	50kg
Support strength*	80kg	100kg

\* Including shelf weight

## Heavy-duty shelf

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

- Load capacity: 50kg

Load resistance	Support strength	Floor load resistance	Chamber total load resistance *2	Weight / shelf
50kg *1	100kg	70kg	80kg	8kg

\*1 Including shelf weight

\*2 Chamber total load resistance: Sum of the loading weight of all shelves and the floor area loading weight

## Additional cable port/Door notch

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

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



Cable port



Door notch

## Computer interface

- RS-485
- GPIB
- RS-232C

## Communication cables

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

## Specimen temperature control

Sensors are attached to the specimen to allow exposure tests that provide accurate temperature stress to the specimen.

- Insulated type
- Non-insulated type



## 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

# Options

Rapid-Rate Temperature Cycle Type

5K/min.

10K/min.

15K/min.

20K/min.

25K/min.

Standard Type

## 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)



## Recorder output terminal

- Temperature, humidity, and heater output

This terminals output the temperature and relative humidity in the test area.



- Dry (wet) bulb temperature
- Terminal board for dry-bulb sensors in the chamber.



## Wet bulb wick

Fine wick of the same kind as the accessories.

FW-5 (24 wicks)



## 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.



## Status output terminal

When the chamber is setting operation such as "Error", interlock with connecting devices.

Operation:

When connecting with N.O. contact (normally open contact), output "close" contact.

When connecting with N.C. contact (normally close contact), output "open" contact.

Current-carrying capacity: 250 V AC, 3 A  
Accessory: Plug

Location: Right side or within the control board (retrofit is not available)

\*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: 214mm

No. of levels: 2 Heigh: 254mm

No. of levels: 3 Heigh: 294mm

No. of levels: 4 Heigh: 334mm

Location: Chamber top (right)

## Emergency stop pushbutton

Stops the chamber immediately.



With guard

## 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

Model	ARSF-0250-10	ARSF-0250-15	ARSF-0400-10	ARSF-0400-15	ARSF-0800-10	ARSF-0800-15		
System	Balanced Temperature & Humidity Control (BTHC) system							
Temp. performance <sup>*1</sup>	Temperature range	-70 to +180°C (-94 to +356°F)						
	Temperature fluctuation	±0.3K						
	Temperature variation in space	-70 to +150°C: 1.5K, +150.1 to +180°C: 2.0K						
	Temp. rate of change	Heat up rate	10K/min.	18K/min.	10K/min.	15K/min.	10K/min.	15K/min.
		Pull down rate	10K/min.	18K/min.	10K/min.	15K/min.	10K/min.	15K/min.
	Temperature extremes achievement time	Heat up time	+20°C to +180°C					
			20 min.	15 min.	20 min.	15 min.	20 min.	15 min.
Pull down time	+20°C to -70°C							
	20 min.	15 min.	20 min.	15 min.	20 min.	15 min.		
Allowable heat load	Test area temperature: +20°C 6000W					9000W		
Temp. & humid. performance <sup>*1</sup>	Temp. & humid. range	+10 to 95°C/ 10 to 98%rh						
	Humid. fluctuation	±2.5%rh						
	Allowable heat load	Test area conditions: +25 to 95°C/ 90%rh 350W			Test area conditions: +25 to 95°C/ 90%rh 550W			
Exterior material	Stainless steel plate: 18 Cr stainless steel plate, hairline finish							
Test area material	Stainless steel plate: 18-8 Cr-Ni stainless steel plate, 2B polish							
Heater	Nichrome strip wire heater							
Humidifier	Sheathed heater							
Cooler / Dehumidifier	Plate fin cooler							
Water tank capacity	16L			32L				
Refrigerator	System	Mechanical cascade refrigeration						
	Compressor	Scroll-type						
	Condenser	4.47kWx4.47kW	5.59kWx5.59kW	4.47kWx4.47kW	5.59kWx5.59kW	9.69kWx9.69kW		
	Expansion system	Electronic expansion valve						
	Refrigerant \NEW/	R404A [R-449A is available on request] / R508A						
Capacity	249L		398L		784L			
Chamber total load capacity	100kg (shelf support pole: 90kg, floor: 70kg)							
Inside dimensions mm <sup>*2</sup>	W600xH830xD500		W600xH830xD800		W1000xH980xD800			
Outside dimensions mm <sup>*2</sup>	W800xH1703xD1900		W800xH1703xD2200		W1200xH1853xD2200			
Weight	725kg	730kg	750kg	755kg	910kg	1000kg		
Utility requirements	Ambient conditions		0 to +40°C (+32 to +104°F) / 75%rh max.					
	Power supply (selectable)	200V AC 3φ50/60Hz	60A	78A	60A	78A	86A	126A
		220V AC 3φ60Hz <sup>*3</sup>	58A	76A	58A	76A	83A	122A
		380V AC 3φ50Hz <sup>*3</sup>	27A	34A	27A	34A	36A	53A
		400V AC 3φ50Hz <sup>*3</sup>	27A	34A	27A	34A	36A	52A
Cooling water flow rate (Reference water temp.+32°C)		3300L/h	4740L/h	3300L/h	4740L/h	6360L/h		
Noise level <sup>*4</sup>	65dB							

\*1: The performance values are based on IEC60068-3-5:2001 and IEC60068-3-6:2001; Performance figures are given for a +23°C, ambient temperature relative humidity of 65±20%rh, rated voltage, and no specimen inside the test area.

\*2: Dimensions do not include protrusions.

\*3: Conforms to CE marking based on EU directives.

\*4: Measured in anechoic room. Measurement points set 1m apart from the front of the chamber, and 1.2m above the floor (in compliance with JIS-Z-8731:1999 A-weighted sound pressure level).

# ARGF

# -70~+180°C

## TEMPERATURE CHAMBER

Model	ARGF-0250-10	ARGF-0250-15	ARGF-0400-10	ARGF-0400-15	ARGF-0800-10	ARGF-0800-15		
System	Balanced Temperature Control system (BTC) system							
Temperature Performance <sup>*1</sup>	Temperature range	-70 to +180°C (-94 to +356°F)						
	Temperature fluctuation	±0.3K						
	Temperature variation in space	-70 to +150°C: 1.5K, +150.1 to +180°C: 2.0K						
	Temp. rate of change	Heat up rate	10K/ min.	18K/ min.	10K/ min.	15K/ min.	10K/ min.	15K/ min.
		Pull down rate	10K/ min.	18K/ min.	10K/ min.	15K/ min.	10K/ min.	15K/ min.
	Temperature extremes achievement time	Heat up time	+20°C to +180°C					
			20 min.	15 min.	20 min.	15 min.	20 min.	15 min.
Pull down time	+20°C to -70°C							
	20 min.	15 min.	20 min.	15 min.	20 min.	15 min.		
Allowable heat load	Test area temperature: +20°C 6000W					9000W		
Exterior material	Stainless steel plate: 18 Cr stainless steel plate, hairline finish							
Test area material	Stainless steel plate: 18-8 Cr-Ni stainless steel plate, 2B polish							
Heater	Nichrome strip wire heater							
Cooler	Plate fin cooler							
Refrigerator	System	Mechanical cascade refrigeration						
	Compressor	Scroll-type						
		4.47kWx4.47kW	5.59kWx5.59kW	4.47kWx4.47kW	5.59kWx5.59kW	9.69kWx9.69kW		
	Condenser	Water-cooled condenser						
	Expansion system	Electronic expansion valve						
Refrigerant	R404A [R-449A is available on request] / R508A							
Capacity	249L		398L		784L			
Chamber total load capacity	100kg (shelf support pole: 90kg, floor: 70kg)							
Inside dimensions mm <sup>*2</sup>	W600xH830xD500		W600xH830xD800		W1000xH980xD800			
Outside dimensions mm <sup>*2</sup>	W800xH1703xD1900		W800xH1703xD2200		W1200xH1853xD2200			
Weight	715kg	720kg	740kg	745kg	900kg	990kg		
Utility requirements	Ambient conditions		0 to +40°C (+32 to +104°F) / 75%rh max.					
	Power supply (selectable)	200V AC 3φ50/60Hz	60A	78A	60A	78A	86A	126A
		220V AC 3φ60Hz <sup>*3</sup>	58A	76A	58A	76A	83A	122A
		380V AC 3φ50Hz <sup>*3</sup>	27A	34A	27A	34A	36A	53A
		400V AC 3φ50Hz <sup>*3</sup>	27A	34A	27A	34A	36A	52A
Cooling water flow rate (Reference water temp. +32°C)		3300L/h	4740L/h	3300L/h	4740L/h	6360L/h		
Noise level <sup>*4</sup>	65dB							

\*1: The performance values are based on IEC60068-3-5:2001 and IEC60068-3-6:2001; Performance figures are given for a +23°C, ambient temperature relative humidity of 65±20%rh, rated voltage, and no specimen inside the test area.

\*2: Dimensions do not include protrusions.

\*3: Conforms to CE marking based on EU directives.

\*4: Measured in anechoic room. Measurement points set 1m apart from the front of the chamber, and 1.2m above the floor (in compliance with JIS-Z-8731:1999 A-weighted sound pressure level).

# Options

## Power cable

- 2.5 m
  - 5 m
  - 10m
- \* Not mounted 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 without pressure-reducing valve



Pure water coupling  
(with pressure-reducing valve)

	Pure Water Coupling	
	With Pressure-Reducing Valve	Without Pressure-Reducing Valve
Water pressure	0.05 to 0.50MPa (Gauge)	0.03MPa (Gauge)
Flow rate	1.3 L/minute or more	
Conductivity	0.1 to 10µS/cm	
Location	Lower left rear side	Upper left rear side
Connectable items	Only a steel pipe (or a PVC pipe) can be connected.	Only a hose can be connected.

\* Water supplier shall be connected by the customer.

## Water purifier (WS-1)

Removes all impurities and constantly creates pure water suitable for humidifying purposes.

Conductivity: 10µs/cm or less

Water production capacity: 12 L/h  
(Water temperature: 25°C)

Size: W400×H400×D280mm



Water leak detection system and dew tray (P.14) to catch dripping water are also available to detect and prevent water damages.

## Water tank

For supplying water to the chamber's fixed tank.

- Tank with screw tap (stand included)  
Capacity: 10 L×3  
Stand size: W600×H920×D348 mm
- Tank with nozzle  
Capacity: 10 L×1



Tank with screw tap  
(stand included)

Tank with nozzle

## Shelf, shelf bracket

The same with standard accessory.



Model	0250	0400	0800
Shelf size (mm)	W567 D450	W567 D750	W967 D750
Shelf weight	1.4kg	2.2kg	6.6kg
Shelf load capacity (evenly distributed load)	10kg	10kg	30kg
Support strength*	90kg		

\* Including shelf weight

## Heavy-duty shelf

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

## Specimen basket

For small specimens that cannot be placed directly on the shelf.

Material: Stainless steel (4 mesh)

- Large  
Dimensions: W750×H35×D450 mm  
Load capacity: 5 kg (equally distributed load)  
Baskets per shelf: Type 0250: 0  
Type 0400: 1  
Type 0800: 2
- Small  
Dimensions: W350×H35×D270 mm  
Load capacity: 3 kg (equally distributed load)  
Baskets per shelf: Type 0250: 2  
Type 0400: 4  
Type 0800: 6

\* Do not use when exceeding the shelf load capacity.

\* Performance may not satisfy guaranteed values if the air flow is blocked, so please be sure to have sufficient space around the specimen baskets.



## Floor reinforcement

Increase the floor load capacity of the inner chamber.

- 100 kg
- 200 kg
- 300 kg

Standard specification: 70 kg

Load resistance	Support strength *2	Floor load resistance *3	Chamber total load resistance *4	Weight / shelf	Max. Qty. in Chamber
30kg	90kg	70kg	100kg	0250 — 2.7kg 0400 — 4.3kg	3
50kg *1	100kg	70kg	100kg	0250 — 3.2kg 0400 — 5.1kg 0800 — 12.1kg	2

\*1 Including shelf weight

\*2 Brackets and supports are changed from standard accessories and brackets must be locked down by screw.

\*3 The floor can be reinforced to support weights up to 300 kg. In this case, the chamber total load resistance will also change.

\*4 Chamber total load resistance: Sum of the loading weight of all shelves and the floor area loading weight

# Options

Rapid-Rate Temperature Cycle Type

5K/min.

10K/min.

15K/min.

20K/min.

25K/min.

Standard Type

## Additional cable port/Door notch

- ø50mm
- ø100mm
- ø150mm
- Flat cable port
- Door notch H100×D50mm

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



Cable port

Door notch

## Cable port rubber plug

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



ø50 mm

With slits ø150 mm



Flat cable port

Spiral-wrapped type

## Door without viewing window

Plain door ideal to test specimens affected by light.

\* There is no lamp installed in the test area with this option.

## Computer interface

- RS-485
- GPIB
- RS-232C

## Communication cables

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

## Specimen temperature control

Sensors are attached to the specimen to allow exposure tests that provide accurate temperature stress to the specimen.

- Insulated type
- Non-insulated type



## Paperless recorder-portable type

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)



## Recorder output terminal

- Temperature, humidity, and heater output \*ARSF only  
This terminals output the temperature and relative humidity in the test area.



- Dry bulb temperature \*ARGF only  
Terminal board for dry-bulb sensors in the chamber.



### 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



### Power meter

This option displays the integral power consumption of the chamber.

Display range: 0 to 9999.99 kWh

External memory: SD memory card

Location: Instrumentation panel

\* The SD memory card is not supplied.

### Wet bulb wick

Fine wick of the same kind as the accessories.

FW-5 (24 wicks)



### 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.

### 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.



### Status indicator light

Please select lighted or blinking, and requirement of buzzer sound.

No. of levels: 3

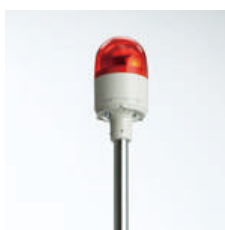


### Rotating signal light

The rotating signal lights up when an error occurs.

Color of the signal:

- Red
- Yellow



### Trouble buzzer

Buzzer notification when an error occurs.

### Emergency stop pushbutton

Stops the chamber immediately.



With guard

### 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

# HRS·HRG

-70~+180°C (20~98%rh)

## TEMPERATURE (& HUMIDITY) CHAMBER



### ● Supports large capacities

Size customize are possible to suit various specimen sizes and testing conditions. We are also able to provide proposals to ensure testing safety.

Model	HRS-357HS-20	HRS-600HS-20	HRS-800HS-20	HRS-1800HS-20	HRS-357HS-25	HRS-600HS-25	HRS-800HS-25	HRS-1800HS-25
Temperature range	-70 to +180°C (-94 to +356°F)							
Temp. rate of change	Heat up rate				25K/min.			
	Pull down rate				20K/min.			
Temp. & humid. range	+20 to 85°C/ 20 to 98%rh							
Inside dimensions (W×H×Dmm) *	700	1000	1000	1500	700	1000	1000	1500
	850	1000	1000	1200	850	1000	1000	1200
	600	600	800	1000	600	600	800	1000
Capacity	357L	600L	800L	1800L	357L	600L	800L	1800L

Model	HRG-357HS-20	HRG-600HS-20	HRG-800HS-20	HRG-1800HS-20	HRG-357HS-25	HRG-600HS-25	HRG-800HS-25	HRG-1800HS-25
Temperature range	-70 to +180°C (-94 to +356°F)							
Temp. rate of change	Heat up rate				25K/min.			
	Pull down rate				20K/min.			
Inside dimensions (W×H×Dmm) *	700	1000	1000	1500	700	1000	1000	1500
	850	1000	1000	1200	850	1000	1000	1200
	600	600	800	1000	600	600	800	1000
Capacity	357L	600L	800L	1800L	357L	600L	800L	1800L

\* Dimensions do not include protrusions.



# Features

Rapid-Rate Temperature Cycle Type  
5K/min.  
10K/min.  
15K/min.  
20K/min.  
25K/min.  
Standard Type

## Standard Type

### ● Temperature & Humidity Range

Minimum temp.:  $-45^{\circ}\text{C}/-75^{\circ}\text{C}$   
 Maximum temp.:  $+180^{\circ}\text{C}$   
 Humid. (ARL/ARS only): 10 to 98%rh

### ● Temperature Change Rate

Approx. 3K/min., with 50kg of specimen\*,  $-75 \leftrightarrow +180^{\circ}\text{C}$ . (ARS-1100)  
 This can also be used for acceleration testing.

\*Specimen as aluminum, including 12kg of shelf

### ● Specimen Temperature Control (Standard)

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

Allowable heat load is different depends on models and operation conditions. (Page 19 to 22)

\*For your safety, please be sure to connect the power through specimen power supply control terminal.

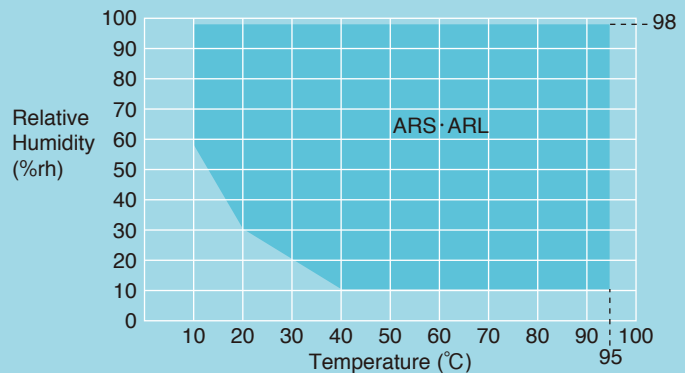
\*Temperature-triggered circuit breaker is available (customized option).



Product images shown may include options.

### ● Temperature & Humidity Control Range

(In environment of ambient temperature of  $+20^{\circ}\text{C}$ , no specimen.)



\* Continuous operation at or below  $+40^{\circ}\text{C}$  is limited because of frost formation on the cooler and dehumidifier.

**3 year warranty**

\NEW/

## Model lineup standard type

Model*	Capacity	Temp. range	Temp. rate of change	
			Heat up rate	Pull down rate
ARS/ARG		$-75$ to $+180^{\circ}\text{C}$	$-49.5 \leftrightarrow 154.5^{\circ}\text{C}$	
-0220	220L		6.0K /min	5.2K /min
-0390	390L		5.0K /min	4.0K /min
-0680	680L		6.0K /min	4.2K /min
-1100	1100L		4.7K /min	4.1K /min
ARL/ARU		$-45$ to $+180^{\circ}\text{C}$	$-22.5 \leftrightarrow 157.5^{\circ}\text{C}$	
-0680	680L		6.3K /min	4.8K /min
-1100	1100L		4.7K /min	4.4K /min

\* ARS/ARL : temperature & humidity

\* ARG/ARU : temperature only

# Features



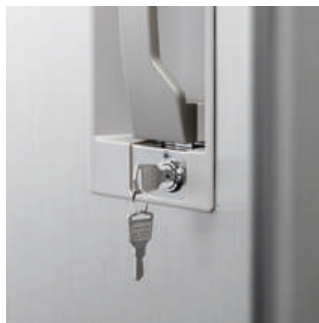
Inside of the ARL-0680 chamber



Viewing window (option)



Water tank



Key

## ● Test Standard Conformance

- IEC 60068-2-1: Cold
- IEC 60068-2-2: Dry heat
- IEC 60068-2-14Nb: Change of temperature with specified rate of change
- IEC 60068-2-78: Damp heat, steady state
- ISO 16750-4 (5.3): Road vehicles (Temperature cycling)

## ● ø100mm Cable Ports on Both Sides

ø100mm cable ports are fitted as standard to enable easy access to the inside of the chamber from the left and the right.

## ● Large Viewing Window (Option)

The chamber lamp (halogen lamp) facilitates visibility within the chamber.

### Size of Viewing Window

W340xH440mm

## ● Water Supply System

The back of the chamber is fitted with a water suction port connected directly to the pure water, and the front of the chamber is fitted with a water tank.

## ● Door handle lock with key

Door handle lock prevents the chamber door from opening during a test. Also the key is equipped to ensure additional security to protect testing and specimen.

## ● International Test Standards

Conforms to IEC 60068-2, ISO 16750-4 (5.3) and other representative environmental testing standards. (Test standard list below)

## ● Global Safety Standards

ISO 12100 (Safety of machinery)  
 ISO 14121 (Risk assessment)  
 IEC 61000-6-2, IEC 61000-6-4 (EMC)  
 EN 50581 (RoHS)  
 CE marking (For marked models & power voltage, see page 19 to 22.)

# Controller

Rapid-Rate Temperature Cycle Type  
5K/min.  
10K/min.  
15K/min.  
20K/min.  
25K/min.  
Standard Type

## N instrumentation P-310

### Color LCD Touch Panel

A 7-inch wide color LCD fitted with LED backlight. Tabs are displayed at the bottom of the screen to help access to other screens.

### Chamber Lamp ON/OFF

The chamber lamp can be switched ON and OFF from all screens.

### Multilingual Support

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

### 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.

### Registering Test Patterns

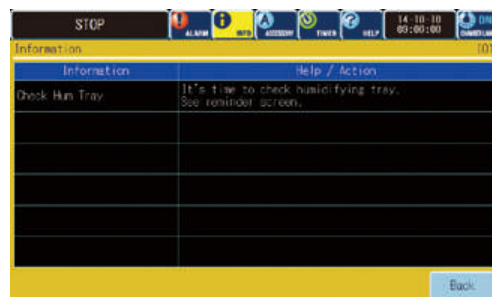
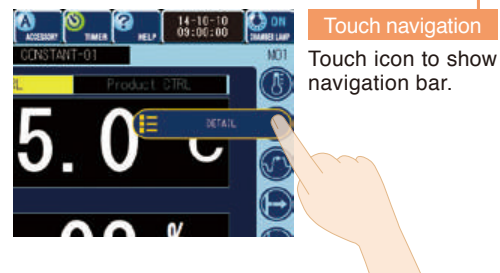
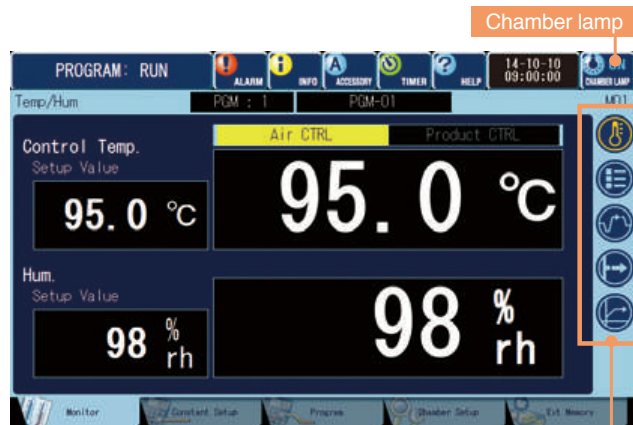
Program operation: 40 patterns (99 steps per program)  
Constant operation: 3 patterns

### Test Data Records

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

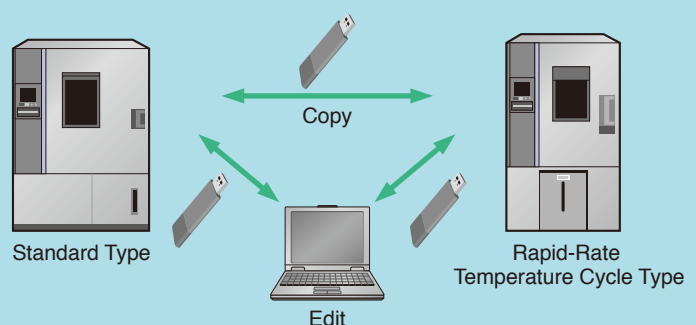
### Program Pattern Copying

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.)



Information

### Program Copy and Computer Editing



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

# ARS

## -75 to +180°C • 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 <sup>*1</sup>	Temp. range	-75 to +180°C (-103 to +356°F)			
	Temp. fluctuation	±0.3K			
	Temp. variation in space	3.0K			
	Temp. rate of change <sup>*2</sup>	Heat up rate	6.0 K/min.	5.0 K/min.	6.0 K/min.
		Pull down rate	5.2 K/min.	4.0 K/min.	4.2 K/min.
	Temperature extremes achievement time	Heat up time	+20 to +180°C		
			Within 35 min.	Within 45 min.	Within 30 min.
		Pull down time	+20 to -75°C		
			Within 40 min.	Within 50 min.	Within 50 min.
	Allowable heat load	Test area temperature: +20°C 3000 W		4500 W	
Temp. & humid. performance <sup>*1</sup>	Temp. & humid. range	+10 to +95°C / 10 to 98%rh			
	Humid. fluctuation	±2.5%rh			
	Allowable heat load	Test area conditions: +25 to +95°C /90%rh 350 W	300 W	Test area conditions: +85°C /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 (1.75 kW×2)		(3 kW×2)	
	Humidifier	Sheathed heater			
	Cooler	Plate fin cooler and dehumidifier			
	Water tank capacity	40L			
	Refrigeration unit	System	Mechanical cascade and compression refrigeration system		
		Compressor	Rotary-type Unit 1: 2.2 kw ×1, Unit 2: 2.2 kw ×1		Scroll-type Unit 1: 3.0 kw ×1, Unit 2: 3.0 kw ×1
		Condenser	Air-cooled condenser		
		Expansion system	Electronic expansion valve		
		Refrigerant <span style="color: orange;">\NEW/</span>	R404A [R-449A is available on request] / R508A		R404A [R-449A is available on request] / R23
		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 <sup>*3</sup>	W700×H800×D400	W700×H800×D700	W850×H1000×D800	W1100×H1000×D1000	
Outside dimensions mm <sup>*3</sup>	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°C (+32 to +104°F) / 75%rh max.			
	Power supply <sup>*4</sup>	200V AC 3φ50/60Hz	—	—	63 A
		220V AC 3φ60Hz	38 A	38 A	58 A
		380V AC 3φ50Hz	24 A	24 A	28 A
	400V AC 3φ50Hz <sup>*5</sup>	23 A	23 A	27 A	
Noise level <sup>*6</sup>	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: Excluding protrusions.

\*4: Power supply voltage fluctuation to be ±10% of rated value.

\*5: Conforms to CE marking based on EU directives.

\*6: 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).

Model		ARL-0680	ARL-1100	
System		Balanced Temperature & Humidity Control (BTHC) system		
Temp. performance <sup>*1</sup>	Temp. range	-45 to +180°C (-49 to +356°F)		
	Temp. fluctuation	±0.3K		
	Temp. variation in space	3.0K		
	Temp. rate of change <sup>*2</sup>	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	
		Pull down time	Within 30 min.	Within 40 min.
Allowable heat load	Test area temperature: +20°C 4500 W			
Temp. & humid. performance <sup>*1</sup>	Temp. & humid. range	+10 to +95°C / 10 to 98% rh		
	Humid. fluctuation	±2.5%rh		
	Allowable heat load	Test area conditions: +85°C /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 (3 kW×2)		
	Humidifier	Sheathed heater		
	Cooler	Plate fin cooler and dehumidifier		
	Water tank capacity	40L		
	Refrigeration unit	System	Mechanical single-stage refrigeration system	
		Compressor	Scroll-type	
		Condenser	3.0 kw	3.75 kw
		Expansion system	Air-cooled condenser	
Refrigerant <span style="color: orange;">\NEW/</span>		Electronic expansion valve		
Air circulator	R404A [R-449A is available on request]			
Air circulator	Sirocco fan			
Capacity	680 L	1100 L		
Chamber total load resistance	80 kg	150 kg		
Inside dimensions mm <sup>*3</sup>	W850×H1000×D800	W1100×H1000×D1000		
Outside dimensions mm <sup>*3</sup>	W1050×H1955×D1805	W1300×H1955×D2005		
Weight	510 kg	600 kg		
Utility requirements	Allowable ambient conditions	0 to +40°C (+32 to +104°F) / 75%rh max.		
	Power supply <sup>*4</sup>	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 <sup>*5</sup>	22 A	23 A		
Noise level <sup>*6</sup>	61 dB	62 dB		
Exhaust heat quantity kJ/h (kcal/h)	32400 (7743)	39600 (9464)		

\*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: Excluding protrusions.

\*4: Power supply voltage fluctuation to be ±10% of rated value.

\*5: Conforms to CE marking based on EU directives.

\*6: 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°C

## TEMPERATURE CHAMBER

Model	ARG-0220	ARG-0390	ARG-0680	ARG-1100	
System	Balanced Temperature Control (BTC) system				
Temp. performance <sup>*1</sup>	Temp. range	-75 to +180°C (-103 to +356°F)			
	Temp. fluctuation	±0.3 K			
	Temp. variation in space	3.0 K			
	Temp. rate of change <sup>*2</sup>	Heat up rate	6.0 K/min.	5.0 K/min.	6.0 K/min.
		Pull down rate	5.2 K/min.	4.0 K/min.	4.2 K/min.
	Temperature extremes achievement time	Heat up time	+20 to +180°C		
			Within 35 min.	Within 45 min.	Within 35 min.
		Pull down time	+20 to -75°C		
			Within 40 min.	Within 50 min.	Within 50 min.
	Allowable heat load	Test area temperature: +20°C			
	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			
		(1.75 kW×2)		(3 kW×2)	
	Cooler	Plate fin cooler			
	Refrigeration unit	System	Mechanical cascade refrigeration system		
			Scroll-type		
		Compressor	Unit 1: 2.2 kw ×1, Unit 2: 2.2 kw ×1	Unit 1: 3.0 kw ×1, Unit 2: 3.0 kw ×1	Unit 1: 3.75 kw ×1, Unit 2: 3.75 kw ×1
		Condenser	Air-cooled condenser		
		Expansion system	Electronic expansion valve		
Refrigerant <span style="color: green;">\NEW/</span>		R404A [R-449A is available on request] / R508A	R404A [R-449A is available on request] / R23		
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 <sup>*3</sup>	W700×H800×D400	W700×H800×D700	W850×H1000×D800	W1100×H1000×D1000	
Outside dimensions mm <sup>*3</sup>	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°C (+32 to +104°F) / 75%rh max.			
	Power supply <sup>*4</sup>	200V AC 3φ50/60Hz	—	—	63 A
		220V AC 3φ60Hz	38 A	38 A	58 A
		380V AC 3φ50Hz	24 A	24 A	28 A
		400V AC 3φ50Hz <sup>*5</sup>	23 A	23 A	27 A
Noise level <sup>*6</sup>	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.

\*2: Temperature rate of change in the temperature range excluding ±10% of max/min. temperature.

\*3: Excluding protrusions.

\*4: Power supply voltage fluctuation to be ±10% of rated value.

\*5: Conforms to CE marking based on EU directives.

\*6: 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).

Model		ARU-0680	ARU-1100	
System		Balanced Temperature Control (BTC) system		
Temp. performance <sup>*1</sup>	Temp. range	-45 to +180°C (-49 to +356°F)		
	Temp. fluctuation	±0.3 K		
	Temp. variation in space	3.0 K		
	Temp. rate of change <sup>*2</sup>	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	
		Pull down time	+20 to -45°C	
Allowable heat load	Test area temperature: +20°C 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 (3kW ×2)		
	Cooler	Plate fin cooler		
	Refrigeration unit	System	Mechanical single-stage refrigeration system	
		Compressor	Scroll-type	
			3.0 kw	3.75 kw
		Condenser	Air-cooled condenser	
Expansion system		Electronic expansion valve		
Refrigerant \NEW/	R404A [R-449A is available on request]			
Air circulator	Sirocco fan			
Capacity	680 L	1100 L		
Chamber total load resistance	80 kg	150 kg		
Inside dimensions mm <sup>*3</sup>	W850×H1000×D800	W1100×H1000×D1000		
Outside dimensions mm <sup>*3</sup>	W1050×H1955×D1805	W1300×H1955×D2005		
Weight	505 kg	595 kg		
Utility requirements	Allowable ambient conditions	0 to +40°C (+32 to +104°F) / 75%rh max.		
	Power supply <sup>*4</sup>	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 <sup>*5</sup>	22 A	23 A		
Noise level <sup>*6</sup>	61 dB	62 dB		
Exhaust heat quantity kJ/h (kcal/h)	32400 (7743)	39600 (9464)		

\*1: At ambient temperature +20°C, 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: Excluding protrusions.

\*4: Power supply voltage fluctuation to be ±10% of rated value.

\*5: Conforms to CE marking based on EU directives.

\*6: 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

Rapid-Rate Temperature Cycle Type

5K/min.

10K/min.

15K/min.

20K/min.

25K/min.

Standard Type

## Power cable

- 2.5 m
  - 5 m
  - 10m
- \* Non mounted as standard

## Water purifier (WS-1)

Water purifier with reverse osmosis membrane. Produces approx 6.6L per hour (at primary water temp. +10°C).



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

## Additional cable port

- 50 mm
  - 100 mm
- \* Each cable port is equipped with a silicone sponge rubber plug.



## Cable port rubber plug

- ø50 mm
- ø100 mm
- With slits ø50mm
- With slits ø100mm

## Viewing window

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



## Shelf, shelf bracket

Equivalent to standard accessory.



Model	0220	0390	0680	1100
Shelf size (W×Dmm)	667×350	667×650	817×750	1067×950
Shelf weight	2 kg	3 kg	6 kg	12 kg
Shelf load capacity (evenly distributed load)	30 kg	30 kg	40 kg	50 kg
Support strenght *	50 kg	80 kg	80 kg	100 kg

\* Including shelf weight

## Computer interface

- RS-485
- GPIB
- RS-232C

## Communication cables

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

## Heavy-duty shelf

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

\* Standard for 1100L model

Model	0220	0390	0680
Load capacity	50 kg		
Shelf weight	3 kg	4 kg	8 kg
Support strength	80 kg		

## Temperature recorder (digital)

Portable type  
- 100 to +200°C 6 dots

## Temperature and humidity recorder (digital)

Portable type  
- 100 to +200°C / 0 to 100%rh 6 dots



### Paperless recorder - portable type

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)



### Additional overheat protector

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



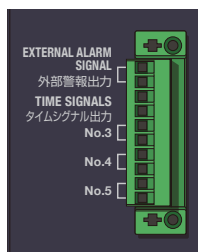
### Overcool protector

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



### External alarm terminal

If the safety device of the chamber is activated, alarm signal will be sent to remote location through this terminal.



### Emergency stop switch

Stops the chamber immediately.



200V AC, 220V AC spec. 380V AC, 400V AC spec.

### Trouble buzzer

If a trouble occurs, the buzzer will alert you of the situation.

### Rotating signal lamp

The lamp lights up when alarm triggers. (Red or yellow)



### 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

### ⚠ 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.

## Chambers Can be Operated from PCs and Tablet Terminals



Image

### 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

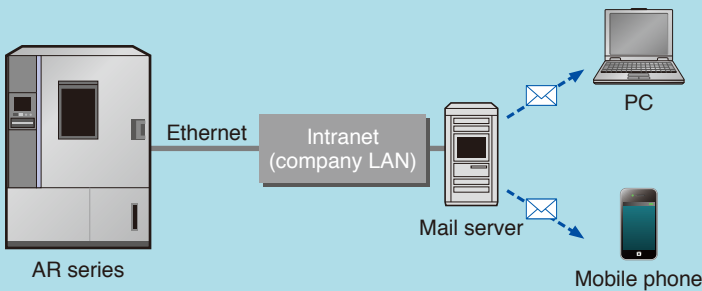
Settings and measurement values saved in the testing chamber can be displayed as graphs on a web browser.

### 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.

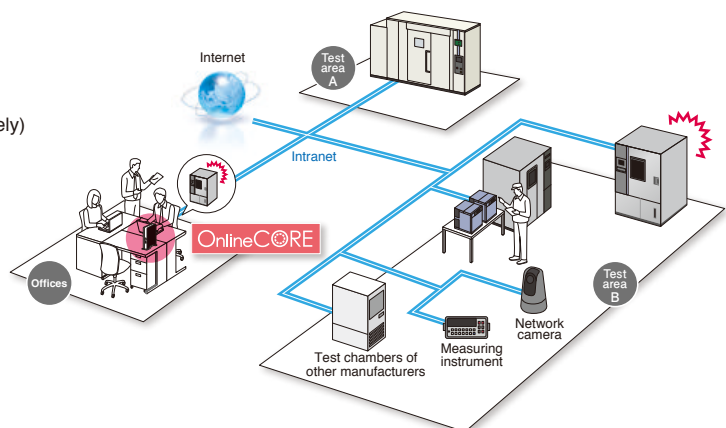
\* An Intranet environment is required to transmit e-mails.

### Email alert



## ESPEC OnlineCore OnlineC@RE (Sold separately)

Central control system recommended for multiple environmental test chambers installations



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

# Rapid-rate thermal cycle chamber lineup

## RAPID-RATE THERMAL CYCLE CHAMBER

The TCC provides very high-speed temperature change of the specimen to meet a wide variety of applications from JEDEC standards to screening. An outstanding temperature change rate makes it possible to subject specimens to uniform temperature stress.

Two different control systems are employed: specimen temperature ramp control with a specimen temperature change rate of 15K/minute, air temperature non-ramp control for temperature cycle testing and thermal shock testing.

Model	Temperature range	Interior dimensions W×H×Dmm
TCC-150W	-70 to +180°C	800×500×400

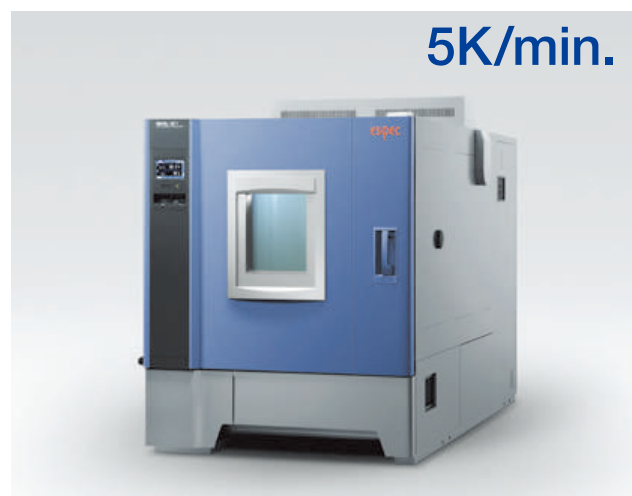


## FASTER TEMPERATURE (& HUMIDITY) CHAMBER

### 1800 L internal capacity to support large specimens

High stress can now be applied to specimen thanks to a high temperature change of 5K/minute

Model	Temperature & humidity range	Interior dimensions W×H×Dmm
SML-21	-40 to +180°C / 20 to 98%rh	1200×1000×1500
SMU-21	-40 to +180°C	
SMS-21	-70 to +180°C / 20 to 98%rh	
SMG-21	-70 to +180°C	



## BENCH-TOP TYPE TEMPERATURE (& HUMIDITY) CHAMBER

High-accuracy control over a wide temperature range of -60°C to +150°C is possible using our newly developed N-instrumentation. System upgrades can also be performed easily thanks to its various functions and options, ensuring that support is provided for all types of customer testing, research and experimentation.

Model	Power supply	Temperature & humidity range	Interior dimensions W×H×Dmm
SH-242-5	100/200V AC 1φ 50/60Hz 220V AC 1φ 50/60Hz* 230V AC 1φ 50Hz*	-40 to +150°C 30 to 95%rh	300×300×250

- +180°C specification is also available.
- Temperature models (SU) are also available.
- \* Compliance with CE Marking.



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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 Japanese Standards Association (JSA).

\* Registration : ESPEC CORP.  
(Overseas subsidiaries not included)

**ISO 14001 (JIS Q 14001)**

**Environmental Management System Assessed and Registered**

ESPEC CORP.  
(Overseas subsidiaries not included)