



Today, the automotive industry accelerates electronic multi-functions. According to this trend, safety standards such as ISO26262 and IEC61508 require high environmental stress that is generated by thermal shock chambers for higher reliability of vehicle equipments.

It is available from 1,100-liter, 1,650-liter, and 2,200-liter models. Unlike conventional chambers, this enables thermal shock testing of large automobile parts (e.g. Li-ion battery modules, electric turbochargers, intercoolers, radiators, and inverters for vehicles), large flat panel displays, and relatively large products that could not be previously tested due to their size or weight. This is ideal for customers who need to quickly test large amounts of specimens, such as for quality inspection during the production process.

### **Large test area**

Available following three large-capacity models.

TSA-1100-W 1000(W)×1100(H)×1000(D)mm

TSA-1650-W 1500(W)×1100(H)×1000(D)mm

TSA-2200-W 2000(W)×1100(H)×1000(D)mm

### **TSA series common operability**

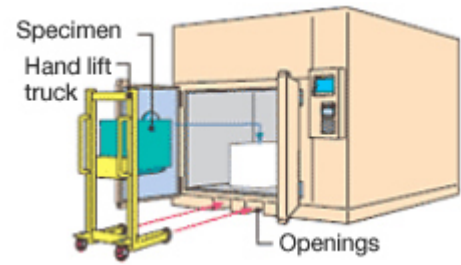
Basic control method is common by using the same interactive touch panel instrumentation as that of the standard TSA series for easy operation.

### **Considerable design for installation**

Large-capacity chambers bring with them the problems of installation space. This chamber has been designed to reduce protrusions as much as possible. The chamber consists of separable unit structure, which facilitates installation work. In addition, the refrigerator can be accessed from the rear for ease of maintenance.

### Easy specimen carry-in & carry-out

In the testing of some specimens, such as battery modules, the weight of specimens increases since not only is the size of specimen large but also the loading capacity is large.



- Designed lower floor of the test area by placing the hot chamber on top and the cold chamber in the rear.
- Openings for a specimen loading hand lift truck.
- Doorstopper prevents accidents when closing the door during operation.

## Safety devices

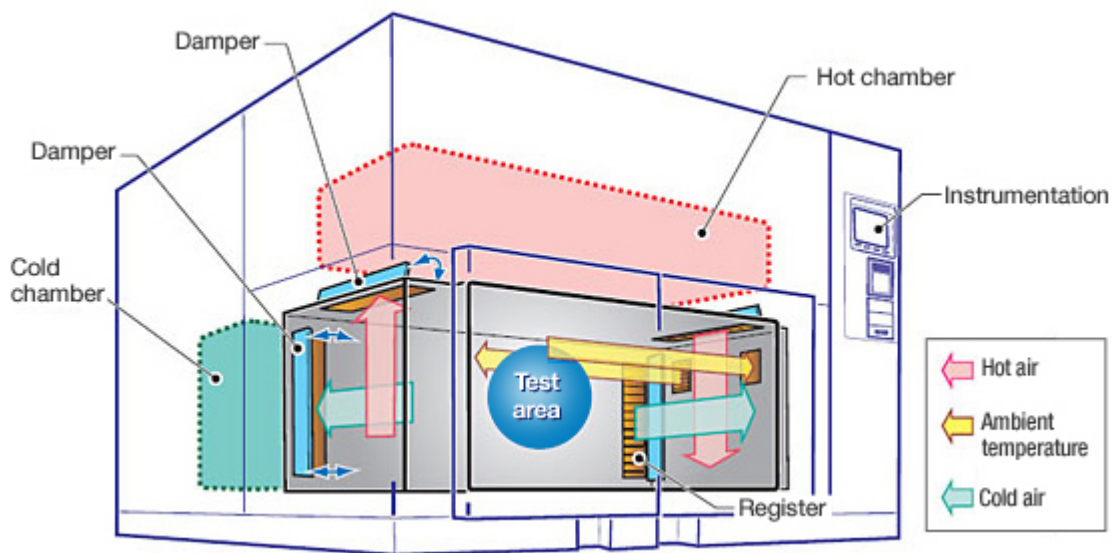
Various safety devices are available in case of testing second batteries and fuel cells that are flammable or gaseous.

Typical devices:

- Pressure release vent
- Gas detector
- Forced ventilation system
- CO<sub>2</sub> gas extinguisher
- Safety lock mechanism

\* Be sure to install the safety device if the chamber is used for charge-discharge testing or testing Li-ion battery packs or Li-ion battery modules.

## Chamber structure



**Main specifications**

Model	TSA-1100S-W	TSA-1650S-W	TSA-2200S-W	TSA-1100H-W	TSA-1650H-W	TSA-2200H-W
Method	Two-zone by means of damper switching (three-zone optional)					
High-temp. exposure range	+60°C to +150°C			+60°C to +180°C		
Low-temp. exposure range	-50°C to -10°C			-60°C to -10°C		
Hot chamber max pre-heat setting temperature	+180°C			+200°C		
Hot chamber temperature heat-up time	Within 40 minutes from ambient temperature to +180°C			Within 30 minutes from ambient temperature to +200°C		
Cold chamber min pre-cool setting temperature	-65°C			-75°C		
Cold chamber temperature pull-down time	Within 150 minutes from ambient temperature to -65°C			Within 150 minutes from ambient temperature to -75°C	Within 80 minutes from ambient temperature to -75°C	Within 90 minutes from ambient temperature to -75°C
Temperature recovery time	<ul style="list-style-type: none"> <li>Two-zone</li> <li>High-temperature exposure: +85°C, 30 min.</li> <li>Low-temperature exposure: -40°C, 30 min.</li> <li>Power supply voltage: 200 V AC</li> <li>Sensor position: upstream</li> <li>Recovery rate: within 10 minutes</li> </ul>			<ul style="list-style-type: none"> <li>Two-zone</li> <li>High-temperature exposure: +150°C, 60 min.</li> <li>Low-temperature exposure: -50°C, 60 min.</li> <li>Power supply voltage: 200 V AC, 3 ohm, 3W, 50/60 Hz (Supporting any power supply voltage as an option)</li> <li>Sensor position: upstream</li> <li>Recovery rate: within 10 minutes</li> </ul>		
Specimen (iron kg)	50kg	100kg	100kg	50kg	100kg	100kg
Test area	W1000mm H1100mm D1000mm	W1500mm H1100mm D1000mm	W2000mm H1100mm D1000mm	W1000mm H1100mm D1000mm	W1500mm H1100mm D1000mm	W2000mm H1100mm D1000mm
Outside dimensions	W2120mm H1990mm D2883mm	W2620mm H1990mm D2883mm	W3120mm H1990mm D2972mm	W2120mm H1990mm D2883mm	W2620mm H1990mm D2883mm	W3120mm H1990mm D2972mm
Weight	Approx. 3,400kg,	Approx. 3700kg	Approx. 3,900kg	Approx. 3,500kg	Approx. 4,200kg	Approx. 4,300kg
Power supply voltage	200 V AC, 3 ohm, 3W, 50/60 Hz (Can support any power supply voltage as an option)					
Maximum current value	125	180	198	172	270	310

Cooling water volume (25°C water) L/hr	1540	2400	2400	2400	4800	4800
Cooling water volume (32°C water) L/hr	2800	4440	4440	4440	8880	8880
Piping connection port diameter	32A	32A	32A	32A	50A	50A

Example of custom Sliding door 

\* For product specifications other than those above, we will make the most suitable suggestion based on your testing requirements. Please contact our sales representatives.

### Examples

- Large Capacity Thermal Shock Chamber + LLC circulator
- -40°C ⇔ +85°C      Test area recovery time 5 min, exposure time 30 min
- +30°C ⇔ +200°C      Test area recovery time 5 min      Specimen: heat exchanger around in-vehicle engine
- -30°C ⇔ +110°C      Test area recovery time 5 min, exposure time 60 min      Specimen: engine cover for vehicles

\* Please contact our sales representatives for more information on support for other testing standards, compatibility with system devices, and support for testing standards of automotive components including JASO D014.

\* Please contact our sales representatives for more information on the conductor resistance evaluation system (AMR) and compatibility with various system devices. We will make the most suitable suggestion for the evaluation of Li-ion batteries based on our abundant experience.

\* This chamber can be used in combination with vibration generators.

### Recommended products for customers viewing this product

Conductor Resistance Evaluation System (AMR)



Air to Air Thermal Shock Chamber



Large Capacity Liquid to Liquid Thermal Shock Chamber



Thermal Shock Chamber 300°C Specification



Large Capacity  
Thermal Shock  
Chamber 603EL  
(600L)



Air to Air Thermal  
Shock Chamber  
with Humidity



Highly Accelerated  
Air to Air Thermal  
Shock Chamber  
(HAATS)



High-rate Thermal  
Cycle Chamber

