Platinous J Series
Temperature & Humidity Chamber · Low Temperature (& Humidity) Chamber
Ultra Low Temperature (& Humidity) Chamber · High Temperature & Humidity Chamber
Low Humidity Type (Low) Temperature & Humidity Chamber · Clean Temperature & Humidity Chamber
ESPEC Platinous J series lineup updated with low GWP refrigerants

127 different models allow you to choose the size and performance best suited for your test applications. ESPEC environmentally friendly products make your business more sustainable.

To minimize our chambers potential environmental impact
R-449A is the best alternative to R-404A

64% Reduction

R-404A
GWP 3920

R-449A
GWP 1397

*R-449A is available on request

Type 1

Type 2
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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<tr>
<th>Model</th>
<th>Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Temperature &amp; Humidity Chamber</strong></td>
<td></td>
</tr>
<tr>
<td>PR-3J / PR-2J / PR-3J / PR-4J</td>
<td>−20 to +100°C (&lt;−20 to +150°C (optional)) (&lt;−20 to +180°C (optional))</td>
</tr>
<tr>
<td><strong>Low Temperature &amp; Humidity Chamber</strong></td>
<td></td>
</tr>
<tr>
<td>PL-3J / PL-2J / PL-3J / PL-4J</td>
<td>−40 to +100°C (&lt;−40 to +150°C (optional)) (&lt;−40 to +180°C (optional))</td>
</tr>
<tr>
<td><strong>Ultra Low Temperature &amp; Humidity Chamber</strong></td>
<td></td>
</tr>
<tr>
<td>PSL-2J / PSL-4J</td>
<td>−70 to +100°C (&lt;−70 to +150°C (optional)) (&lt;−70 to +180°C (optional))</td>
</tr>
<tr>
<td><strong>High Temperature &amp; Humidity Chamber</strong></td>
<td></td>
</tr>
<tr>
<td>PHP-2J / PHP-3J / PHP-4J</td>
<td>ambient temperature +10 to +100°C</td>
</tr>
<tr>
<td><strong>Low Humidity Type Temperature &amp; Humidity Chamber</strong></td>
<td></td>
</tr>
<tr>
<td>PDR-3J / PDR-4J</td>
<td>−20 to +100°C</td>
</tr>
<tr>
<td><strong>Low Humidity Type Low Temperature &amp; Humidity Chamber</strong></td>
<td></td>
</tr>
<tr>
<td>PDL-3J / PDL-4J</td>
<td>−40 to +100°C</td>
</tr>
<tr>
<td><strong>Clean Temperature &amp; Humidity Chamber</strong></td>
<td></td>
</tr>
<tr>
<td>PCR-3J [Cleanliness: Class5 (HEPA Filter)]</td>
<td>−20 to +100°C</td>
</tr>
</tbody>
</table>

**Low Temperature Chambers**

<table>
<thead>
<tr>
<th>Model</th>
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</tr>
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<tbody>
<tr>
<td><strong>Low Temperature Chamber</strong></td>
<td>−40 to +100°C (&lt;−40 to +150°C (optional)) (&lt;−40 to +180°C (optional))</td>
</tr>
<tr>
<td>PU-1J / PU-2J / PU-3J / PU-4J</td>
<td></td>
</tr>
<tr>
<td><strong>Ultra Low Temperature Chamber</strong></td>
<td>−70 to +100°C (&lt;−70 to +150°C (optional)) (&lt;−70 to +180°C (optional))</td>
</tr>
<tr>
<td>PG-2J / PG-4J</td>
<td></td>
</tr>
</tbody>
</table>

*Applicable only to Type 2

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**Models Configuration**

- **Temperature & Humidity Chambers**
  - **Low Humidity Type Temperature & Humidity Chamber**
    - PDR-3J / PDR-4J
  - **Low Temperature & Humidity Chamber**
    - PL-3J / PL-2J / PL-3J / PL-4J
  - **Ultra Low Temperature & Humidity Chamber**
    - PSL-2J / PSL-4J
  - **High Temperature & Humidity Chamber**
    - PHP-2J / PHP-3J / PHP-4J
  - **Low Humidity Type Low Temperature & Humidity Chamber**
    - PDL-3J / PDL-4J
  - **Clean Temperature & Humidity Chamber**
    - PCR-3J [Cleanliness: Class5 (HEPA Filter)]

- **Temperature Chambers**
  - **Low Temperature Chamber**
    - PU-1J / PU-2J / PU-3J / PU-4J
  - **Ultra Low Temperature Chamber**
    - PG-2J / PG-4J

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**RoHS standard (EN 50581)**

International safety standard compliance
- Safety of Machinery (ISO 12100), Low Voltage (IEC 60204-1), EMC (IEC 61000-6-2, IEC 61000-6-4).
* Low Humidity Region Operation Precautions

- Operation in the low humidity region is not possible from a high temperature above +60°C. Perform transition from temperatures below +60°C.
- Gradient programs cannot be used in the low humidity region.
- Programs that require humidifier switching cannot be used.
- Programs that transit from outside the low humidity region to the low humidity region cannot be used. However, the transition from the low humidity region to another region is allowed.
Energy-saving Technologies

- **Smart R&D System**
  (Japanese patent no. 5514787)

Smart R&D System (Smart Refrigerator & Dehumidifier System) is the ESPEC patent, which can control both cooling and heating capacity at minimum limits. It provides highly accurate temperature / humidity environment with low energy consumption. The system consists of PID controlled refrigerator, and N instrumentation, which delivers high speed processing.

- **A Sub Refrigeration Circuit**
  PL-2/3/4, PU-2/3/4, PSL, PG, PDL, PCR

The chambers equip another energy-saving technology, a sub refrigeration circuit controlled by “Smart R&D System” with a 400W compressor. When the chamber operation is stable at constant ranges above 50°C / 40%rh, it switches to sub refrigeration to run at minimum energy. For example, the PL-3J power consumption can be cut by 70% max. (compared to previous K series)

- **DC Inverter Refrigeration**
  (Option, 200V only)
  PL-2/3/4, PU-2/3/4

If the chamber is often used in low temperature ranges, the DC inverter refrigeration is a better option for excellent energy saving performance in low temperature ranges.

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**Power Consumption Comparison**

**New Refrigeration Circuit**

**Energy-saving DC Inverter Refrigeration**

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**Features**

**Smart R&D System**

**A Sub Refrigeration Circuit**

**DC Inverter Refrigeration**

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**The Japan Machinery Federation The Energy-Efficient Machinery Award**
**Features**

- **Viewing Window as Standard**
  Equipped with viewing window as standard, and chamber lamp (LED lamps) provide greater visibility.

- **A Variety of Door Types**
  Several types of chamber doors are available for selection: a standard type with viewing window, a door without a viewing window, and a wide-view door that allows you to check the inside of the whole test area. Furthermore, you can customize the door according to your application by, for example, adding hand-in ports to the door or installing an inner glass door to the chamber door. (Page 11-12, 25-26)

- **Humidifier Delay Function**
  Humidifier operation starts after the temperature is attained in order to reduce dew condensation on specimens.

- **Automatic Humidifier Water Replacement**
  Humidifier stagnant water contains impurities and is a cause of trouble, so the chamber now features a function that automatically replaces the water at the period set from the controller screen.

- **A Choice of Several Water Supply Systems**
  Several options to supply water to the chamber are offered, including direct tap water connection, pure water, additional tanks, etc.
Facile Wick Replacement
PR, PL, PSL, PHP
(Japanese patent no. 5571634)
The difficulty in replacing the wet-bulb wick has been improved by changing the shape of the wick’s plug part to allow smooth replacement work.

Easy Filter Cleaning
The condenser filter can be easily attached and removed from the chamber to make cleaning even easier.

Door & Power Supply Locks
Door lock prevents accidental interruption during testing. The double-lock door handle is designed to close the door more easily and safely. As an option, a power key switch can also be equipped to control the chamber’s power.

Combination with ESPEC Evaluation Systems
Even more accurate Electro-chemical migration evaluations can be performed by connecting a Platinous J Series to our AMI System (sold separately). If the chamber equips with an optional cable port on the right side, the cables can be accessed from both right and left sides of AMI system.

International Standards
ISO 12100 (Safety of machinery)
IEC 60204-1 (Low voltages)
IEC 61000-6-2, IEC 61000-6-4 (EMC)
It is also RoHS and Pressure Equipment Directive-compliant.
**PHP type without a refrigerant compressor, best suited for energy saving and long term applications such as 85°C/85%rh**

Heat pipes are used for the cooling system, which means that the refrigeration system does not use electrical power. Furthermore, it enables high temp./humid. testing such as 95°C / 95%rh as heat pipes barely dehumidify in cooling.

![Structure of Heat Pipe](image)

**ISO Class 5 Cleanliness (PCR)**

PCR employs a HEPA filter to realize ISO Class 5 cleanliness in stable temp. & humid. control.

![Clean Temperature & Humidity Chamber (PCR)](image)

**Superior Low-humidity Control Performance (PDR・PDL)**

With the independently-developed rotary regenerative dehumidifier method, low-humidity control is realized such as 60°C / 5%rh. (Control range chart is on page 4 & 19.)

As an option, further low temp. & humid. range (up to 5°C / 5%rh) can be controlled (page 31.)

![Low Humidity & Low Temperature Chamber (PDL)](image)
Easy-to-use, easy-to-read touch panel

- **Tabbed Interface**
  High resolution 7 inch LCD. Tabs are displayed at the bottom of the screen to help access to other screens. A touch navigation bar is also displayed along the right of the screen to access principal pages anytime.

- **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.
  - Status Notifications
    Defrosting, auto-humidifying water replacement, and so on.

- **Test Data Records & Exports**
  Temp. & humid. settings and measured values are recorded on controller's internal memory. The data and its graph can be exported to USB flash drives.
  * Interval can be changed.

- **Program Patterns Copying**
  Program patterns can be copied between chambers with the use of USB flash drives without using a computer.

- **PATTERN MANAGER Lite**
  It is a PC software that makes the most of the USB port. Outside of any networks, the test data exported via USB flash drive can be checked and graphed on PC. You can also change the chamber's set values and import the edited data to chambers. The program patterns in accordance with test standards are available on our web site, "Test Navi" (page 38.)
Enable to Monitor & Operate from Web Browser

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.

<table>
<thead>
<tr>
<th>Screen Privileges</th>
<th>Chamber monitor</th>
<th>Constant/ Program setup</th>
<th>Run/Stop</th>
<th>Configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrator</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Operator</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>User</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ESPEC OnlineCore
OnlineCORE (Sold separately, page 38)
Central control system recommended for multiple environmental test chambers installations
Typical Functions/ Options

For Better Operability

In addition to standard specifications, a wide selection of options is available to enhance functions and meet specific testing needs. Test equipment performance can also be enhanced to make it more accurate, multi-functional, or capable of a greater load as designed.

1 Ceiling cable port → P.29
2 Left-side cable port (standard) → P.29
3 EZ connect cable port plug for power supply
   This mounting/dismounting terminal can be additionally installed on the left side cable port. It simplifies to connect the wiring for voltage or measurement equipment to the specimens located inside the chamber. → P.30
4 Wide-view door
   An all-glass wide-view door provides an unrestricted view of every bit of space inside the chamber. Temperature differential with the outside of the chamber can be controlled to suppress the formation of condensation on the glass surface. → P.26

Wide-view door with hand-in ports (Japanese patent No.4137894)
   This option features hand-in ports on a standard door, to manipulate the specimen even during testing. → P.26
Typical Functions/ Options

5 Specimen basket
The basket can be placed on a shelf to hold small specimens. →P.28

6 Shelf
Shelf(s) can be placed in the sides of the test area to hold specimens. →P.28

7 Paperless recorder
Records internal temperature and other temperature (and humidity). →P.32

8 Applying DC power supply
Used to apply voltage to specimens for bias testing. The output mode and interlock conditions can be set for the DC power supply in each step of the temperature and humidity program. →P.31

9 Right-side cable port
A cable port in the right side of the chamber. * The standard cable port is located in the left side.

10 Specimen temperature control
A temperature sensor, which will be connected directly to specimen. It enhances the accuracy of temperature tests. →P.30

11 Power meter
Shows the chamber integral power consumption. →P.32

12 Folding table
A folding table is provided on the right side of the chamber. It can be used to hold measuring instrument, a computer, or other devices connected to the chamber. →P.32

13 100 V power sockets
Two 100 V power sockets can be used to supply power for specimen and/or measuring instruments. One circuit protector is also equipped. →P.25

Wide-view door up to +150°C
Expand temperature range up to +150°C. Hand-in ports and roller blind options are available.

The QR codes on these pages can be used to watch videos about option features, installation, setups, etc.
Safety functions depend on the specimen characteristics. A wide variety of options is available to protect the chamber in the case of specimens that generate corrosive substances, to protect the specimens and the chamber during testing, and to ensure the safety of the operator(s).

**Door handle (standard)**

Large handle provides a better grip. A double lock provides secure opening and closing.

**Door lock (standard)**

Prevents door opening during testing.

**Status indicator light**

Indicator tower provides a view of the chamber status from a remote location. Light color, light status (on, blinking), buzzer on/off can be configured as required.

→ P.33
**Typical Functions/ Options**

4 **Specimen power supply control terminal (standard)**
If the chamber sends an error alert, the equipment's power supply connected through this terminal is shut down immediately.

5 **Overheat protector (standard)**
Additional overheat protector
Specimen protection is enhanced by an additional overheat protector.

6 **Overcool protector**
Operation will stop to protect specimens whenever temperature in the test area drops below a setting temperature for some reason.

7 **Emergency stop pushbutton**
Switch for manual emergency stop of the chamber. Also available with a guard or cover to prevent unintended operation.

8 **Alarm output terminal**
This contact signal terminal is for sending error alerts to a remote location during safety actions.

9 **Power indicator**
Indicates the breaker on/off status from the front of the chamber.

10 **Power key switch**
Installation of the power supply key enables management of the chamber use.

11 **Dehumidifier electrical compartment door switch (standard)**
A breaker turns off to protect against electric shock if a door open state is detected.

The QR codes on these pages can be used to watch videos about option features, installation, setups, etc.
### Model and Specifications

#### System

- **PR−1J**: Balanced Temperature and Humidity Control system (BTHC system)
- **PR−2J**: Balanced Temperature and Humidity Control system (BTHC system)
- **PR−3J**: Balanced Temperature and Humidity Control system (BTHC system)
- **PR−4J**: Balanced Temperature and Humidity Control system (BTHC system)

#### Performance

<table>
<thead>
<tr>
<th>Model</th>
<th>PR−1J</th>
<th>PR−2J</th>
<th>PR−3J</th>
<th>PR−4J</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temp. &amp; humidity range</td>
<td>−20 to +100°C/20 to 98%rh</td>
<td>±2.5%rh</td>
<td>Refer to diagram of temperature &amp; humidity controllable range on this page.</td>
<td></td>
</tr>
<tr>
<td>Temp. &amp; humidity fluctuation</td>
<td>±0.3°C/±2.5%rh</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temperature variation in space</td>
<td>1.5°C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temperature rate of change</td>
<td>Heat up rate: 3.0°C/min.</td>
<td>Heat up rate: 3.0°C/min.</td>
<td>Heat up rate: 3.0°C/min.</td>
<td>Heat up rate: 3.0°C/min.</td>
</tr>
<tr>
<td>Temperature extremes achievement time</td>
<td>Heat up time: from +20 to +100°C 30 min.</td>
<td>Heat up time: from +20 to +100°C 30 min.</td>
<td>Heat up time: from +20 to +100°C 30 min.</td>
<td>Heat up time: from +20 to +100°C 30 min.</td>
</tr>
<tr>
<td>Pull down rate: 2.0°C/min.</td>
<td>Pull down time: from +20 to −20°C 40 min.</td>
<td>Pull down time: from +20 to −20°C 40 min.</td>
<td>Pull down time: from +20 to −20°C 40 min.</td>
<td>Pull down time: from +20 to −20°C 40 min.</td>
</tr>
<tr>
<td>Allowable heat load*4</td>
<td>800 W</td>
<td>1100 W</td>
<td>1250 W</td>
<td></td>
</tr>
</tbody>
</table>

#### Allowable ambient conditions

- 0 to +40°C up to 75%rh

#### Exterior Material

- Stainless steel plate: 18 Cr stainless steel plate, hairline finish

#### Construction

- **PR−1J**: Balanced Temperature and Humidity Control system (BTHC system)
- **PR−2J**: Balanced Temperature and Humidity Control system (BTHC system)
- **PR−3J**: Balanced Temperature and Humidity Control system (BTHC system)
- **PR−4J**: Balanced Temperature and Humidity Control system (BTHC system)

#### Capacity

- 120 L
- 225 L
- 408 L
- 800 L

#### Chamber total load resistance

- 100 kg

#### Inside dimensions

- (W x H x D mm)
  - 500 x 600 x 400
  - 500 x 750 x 600
  - 600 x 850 x 800
  - 1000 x 1000 x 800

#### Outside dimensions

- (W x H x D mm)
  - 910 x 1440 x 873
  - 910 x 1590 x 1073
  - 1010 x 1690 x 1273
  - 1410 x 1840 x 1273

#### Weight

- 260 kg
- 305 kg
- 365 kg
- 480 kg

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*1 The performance values are based on IEC60068-3-5:2001 and IEC60068-3-6:2001.
*2 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.
*3 Lowest attainable temperature in an ambient temperature of 0 to +30°C
*4 Excluding protrusions. Dimension indicated in ( ) includes protrusion.

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**Low GWP Refrigerant**

R-449A is available on request. (PR/PL/PSL/PU/PG only)

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![Temperature & Humidity Control Range](chart)

* With no specimen and under ambient temperature at +23°C.
* Restrictions on continuous humidity operation at +40°C or lower because of frost on the cooler.
Temperature & Humidity Control Range

\[ -40 \text{ to } +100^\circ \text{C} (+150^\circ \text{C} / +180^\circ \text{C}) \text{ • 20 to 98\% rh} \]

**LOW TEMPERATURE & HUMIDITY CHAMBER**

<table>
<thead>
<tr>
<th>Model</th>
<th>PL-1J</th>
<th>PL-2J</th>
<th>PL-3J</th>
<th>PL-4J</th>
</tr>
</thead>
<tbody>
<tr>
<td>System</td>
<td>Balanced Temperature and Humidity Control system (BTHC system)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Temperature & Humidity Control Range**

-40 to +100°C/20 to 98%rh

Refer to diagram of temperature & humidity controllable range on this page.

**Performance**

- **Temp. & humidity fluctuation**
  ±0.3°C/±2.5%rh

- **Temperature rate of change**
  - Heat up rate: 3.0°C/min.
  - Pull down rate: 2.0°C/min.

- **Pull down time**: from +20°C to -40°C 45 min.

- **Heat up time**: from +20°C to +100°C 30 min.

- **Temperature extremes achievement time**
  - Heat up time: from +20°C to +100°C 30 min.
  - Pull down time: from +20°C to -40°C 45 min.

- **Allowable heat load**
<table>
<thead>
<tr>
<th>PL-1J</th>
<th>PL-2J</th>
<th>PL-3J</th>
<th>PL-4J</th>
</tr>
</thead>
<tbody>
<tr>
<td>850 W</td>
<td>1400 W</td>
<td>1500 W</td>
<td>2850 W</td>
</tr>
</tbody>
</table>

**Allowable ambient conditions**

- 0 to +40°C/up to 75%rh

**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**

18−12−2.5 Cr−Ni−Mo stainless steel sheathed heater (surface evaporating system)

**Cooler (dehumidifier)**

Plate fin cooler, stainless steel tube cooler

**Air circulator**

Cross flow fan, Sirocco fan

**System**

Mechanical type single-stage compression cooling

**Refrigerant**

R404A [R-449A is available on request]

**Capacity**

<table>
<thead>
<tr>
<th>PL-1J</th>
<th>PL-2J</th>
<th>PL-3J</th>
<th>PL-4J</th>
</tr>
</thead>
<tbody>
<tr>
<td>120 L</td>
<td>225 L</td>
<td>408 L</td>
<td>800 L</td>
</tr>
</tbody>
</table>

**Chamber total load resistance**

100 kg

**Dimensions**

- **Inside dimensions** (W x H x D mm)
  500 x 600 x 400
  500 x 750 x 600
  600 x 850 x 800
  1000 x 1000 x 800

- **Outside dimensions** (W x H x D mm)
  910 x 1440 x 873
  910 x 1590 x 1073
  1010 x 1690 x 1273
  1410 x 1840 (1970) x 1273

**Weight**

<table>
<thead>
<tr>
<th>PL-1J</th>
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<th>PL-3J</th>
<th>PL-4J</th>
</tr>
</thead>
<tbody>
<tr>
<td>270 kg</td>
<td>340 kg</td>
<td>420 kg</td>
<td>610 kg</td>
</tr>
</tbody>
</table>

*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 Lowest attainable temperature in an ambient temperature of 0 to +30°C

*3 When temperature in chamber is +20°C

*4 Excluding protrusions. Dimension indicated in ( ) includes protrusion.

---

Low GWP Refrigerant

R-449A is available on request.
(PR/PL/PSL/PU/PG only)

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**Temperature & Humidity Control Range**

![Diagram of temperature & humidity control range](image)

- **Frost-free range (Estimate range)**

  * With no specimen and under ambient temperature at +23°C.
  * Restrictions on continuous humidity operation at +23°C.
### PSL -70 to +100°C (+150°C/ +180°C) • 20 to 98%rh

**ULTRA LOW TEMPERATURE & HUMIDITY CHAMBER**

<table>
<thead>
<tr>
<th>Model</th>
<th>PSL-2J</th>
<th>PSL-4J</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>System</strong></td>
<td>Balanced Temperature and Humidity Control system (BTHC system)</td>
<td></td>
</tr>
<tr>
<td><strong>Temp. &amp; humidity range</strong>&lt;sup&gt;2&lt;/sup&gt;</td>
<td>−70 to +100°C/20 to 98%rh</td>
<td></td>
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<tr>
<td>Refer to diagram of temperature &amp; humidity controllable range on this page.</td>
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<tr>
<td><strong>Temp. &amp; humidity fluctuation</strong></td>
<td>±0.3°C/±2.5%rh</td>
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<tr>
<td><strong>Temperature variation in space</strong></td>
<td>1.5°C</td>
<td></td>
</tr>
<tr>
<td>Heat up rate: 5.0°C/min.</td>
<td>Heat up rate: 5.0°C/min.</td>
<td></td>
</tr>
<tr>
<td>Heat down rate: 2.0°C/min.</td>
<td>Heat down rate: 1.0°C/min.</td>
<td></td>
</tr>
<tr>
<td><strong>Temperature extremes</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heat up time: from +20 to +100°C 30 min.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pull down time: from +20 to −70°C 65 min.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Allowable heat load</strong>&lt;sup&gt;1&lt;/sup&gt;</td>
<td>700 W</td>
<td>2200 W</td>
</tr>
<tr>
<td><strong>Allowable ambient conditions</strong></td>
<td>0 to +40°C/ up to 75%rh</td>
<td></td>
</tr>
<tr>
<td><strong>Exterior material</strong></td>
<td>Stainless steel plate: 18 Cr stainless steel plate, hairline finish</td>
<td></td>
</tr>
<tr>
<td><strong>Test area material</strong></td>
<td>Stainless steel plate: 18−8 Cr−Ni stainless steel plate, 2B polish</td>
<td></td>
</tr>
<tr>
<td><strong>Heater</strong></td>
<td>Nichrome strip wire heater</td>
<td></td>
</tr>
<tr>
<td><strong>Humidifier</strong></td>
<td>18−12−2.5 Cr−Ni−Mo stainless steel sheeted heater (surface evaporating system)</td>
<td></td>
</tr>
<tr>
<td><strong>Cooler (dehumidifier)</strong></td>
<td>Plate fin cooler (Doubles as dehumidifier), stainless steel tube cooler</td>
<td></td>
</tr>
<tr>
<td><strong>Air circulator</strong></td>
<td>Cross flow fan</td>
<td>Sirocco fan</td>
</tr>
<tr>
<td><strong>System</strong></td>
<td>Mechanical cascade refrigerator system</td>
<td></td>
</tr>
<tr>
<td><strong>Refrigerant</strong></td>
<td>R404A [R-449A is available on request], R508A</td>
<td></td>
</tr>
<tr>
<td><strong>Capacity</strong></td>
<td>306 L</td>
<td>800 L</td>
</tr>
<tr>
<td><strong>Chamber total load resistance</strong></td>
<td>100 kg</td>
<td></td>
</tr>
<tr>
<td><strong>Inside dimensions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(W x H x D mm)</td>
<td>600 x 850 x 600</td>
<td>1000 x 1000 x 800</td>
</tr>
<tr>
<td><strong>Outside dimensions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(W x H x D mm)</td>
<td>1010 x 1690 x 1273</td>
<td>1410 x 1853 (1983) x 1593</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>470 kg</td>
<td>705 kg</td>
</tr>
</tbody>
</table>

<sup>1</sup> The performance values are based on IEC60068-3-5:2001 and IEC60068-3-6:2001;

<sup>2</sup> 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.

<sup>3</sup> Lowest attainable temperature in an ambient temperature of 0 to +30°C

<sup>4</sup> When temperature in chamber is +20°C

<sup>4</sup> Excluding protrusions. Dimension indicated in ( ) includes protrusion.

---

### Temperature & Humidity Control Range

- **Frost-free range (Estimate range)**

![Temperature & Humidity Control Range Diagram]

*With no specimen and under ambient temperature at +23°C.

*Restrictions on continuous humidity operation at +40°C or lower because of frost on the cooler.

---

**Low GWP Refrigerant**

R-449A is available on request.
(PR/PL/PSL/PU/PG only)
## Performance

<table>
<thead>
<tr>
<th>Model</th>
<th>PHP−2J</th>
<th>PHP−3J</th>
<th>PHP−4J</th>
</tr>
</thead>
<tbody>
<tr>
<td>System</td>
<td>Balanced Temperature and Humidity Control system (BTHC system)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Temp. &amp; humidity range</strong></td>
<td>Ambient temperature +10 to +100°C/40 to 98%rh</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Temp. &amp; humidity fluctuation</strong></td>
<td>±0.3°C/±2.5%rh</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Temperature variation in space</strong></td>
<td>1.5°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Allowable heat load</strong></td>
<td>300 W</td>
<td>600 W</td>
<td></td>
</tr>
<tr>
<td><strong>Allowable ambient conditions</strong></td>
<td>0 to +40°C/up to 75%rh</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Construction</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exterior material</td>
<td>Stainless steel plate: 18 Cr stainless steel plate, hairline finish</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test area material</td>
<td>Stainless steel plate: 18−8 Cr−Ni stainless steel plate, 2B polish</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heater</td>
<td>Nichrome strip wire heater</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Humidifier</td>
<td>18-12−2.5 Cr−Ni−Mo stainless steel sheathed heater (surface evaporating system)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cooler (dehumidifier)</td>
<td>Plate fin cooler (heat pipe system)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air circulator</td>
<td>Cross flow fan</td>
<td>Sirocco fan</td>
<td></td>
</tr>
<tr>
<td><strong>Capacity</strong></td>
<td>219 L</td>
<td>398 L</td>
<td>784 L</td>
</tr>
<tr>
<td>Chamber total load resistance</td>
<td>100 kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inside dimensions (W x H x D mm)</td>
<td>500 x 730 x 600</td>
<td>600 x 830 x 800</td>
<td>1000 x 980 x 800</td>
</tr>
<tr>
<td>Outside dimensions (W x H x D mm)</td>
<td>910 x 1590 x 1073</td>
<td>1010 x 1690 x 1273</td>
<td>1410 x 1840 (1970) x 1273</td>
</tr>
<tr>
<td>Weight</td>
<td>275 kg</td>
<td>335 kg</td>
<td>490 kg</td>
</tr>
</tbody>
</table>

*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 Lowest attainable temperature in an ambient temperature of 0 to +30°C
*3 When temperature in chamber is +20°C
*4 Excluding protrusions. Dimension indicated in ( ) includes protrusion.

### Temperature & Humidity Control Range

- **At ambient temperature +23°C.**
- **At ambient temperature at +30°C.**
- **At ambient temperature at +40°C.**

* With no specimen.
## Temperature & Humidity Control Range

### Performance

<table>
<thead>
<tr>
<th>System</th>
<th>Balanced Temperature and Humidity Control system (BTHC system)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temp. &amp; humidity range (^2)</td>
<td>(-20 \text{ to } +100^\circ\text{C}/5 \text{ to } 98%\text{rh}) Refer to diagram of temperature &amp; humidity controllable range on this page.</td>
</tr>
<tr>
<td>Temp. &amp; humidity fluctuation</td>
<td>(\pm 0.3^\circ\text{C}/\pm 2.5%\text{rh}) (\text{Refer to diagram of temperature &amp; humidity controllable range on this page.})</td>
</tr>
<tr>
<td>Temperature variation in space</td>
<td>1.5(^\circ\text{C})</td>
</tr>
<tr>
<td>Temperature rate of change</td>
<td>Heat up rate: 3.0(^\circ\text{C}/\text{min.}), Pull down rate: 2.0(^\circ\text{C}/\text{min.})</td>
</tr>
<tr>
<td>Temperature extremes achievement time</td>
<td>Heat up time: from (+20 \text{ to } +100^\circ\text{C} 30 \text{ min.}), Pull down time: from (+20 \text{ to } -20^\circ\text{C} 40 \text{ min.})</td>
</tr>
<tr>
<td>Allowable heat load (^3)</td>
<td>1100 W</td>
</tr>
</tbody>
</table>

### Allowable ambient conditions

- Standard temperature and humidity region running: \(0 \text{ to } +40\^\circ\text{C}/\text{up to } 75\%\text{rh}\)
- Low temperature and humidity region running: \(+5 \text{ to } +32\^\circ\text{C}\)
- Absolute humidity no greater than 23g/kg

### Restriction on continuous humidity operation at

- With no specimen and under ambient temperature at \(30\^\circ\text{C}\)

### Temperature & Humidity Control Range

- Standard temperature and humidity control range
- Low humidity control range
- Frost-free range (Estimate range)

### Relative Humidity

<table>
<thead>
<tr>
<th>Temperature(^\circ\text{C})</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>5%rh</td>
<td>30</td>
<td>40</td>
<td>50</td>
<td>60</td>
<td>70</td>
<td>80</td>
</tr>
<tr>
<td>10%rh</td>
<td>32</td>
<td>42</td>
<td>52</td>
<td>62</td>
<td>72</td>
<td>82</td>
</tr>
<tr>
<td>15%rh</td>
<td>34</td>
<td>44</td>
<td>54</td>
<td>64</td>
<td>74</td>
<td>84</td>
</tr>
<tr>
<td>20%rh</td>
<td>36</td>
<td>46</td>
<td>56</td>
<td>66</td>
<td>76</td>
<td>86</td>
</tr>
<tr>
<td>25%rh</td>
<td>38</td>
<td>48</td>
<td>58</td>
<td>68</td>
<td>78</td>
<td>88</td>
</tr>
<tr>
<td>30%rh</td>
<td>40</td>
<td>50</td>
<td>60</td>
<td>70</td>
<td>80</td>
<td>90</td>
</tr>
</tbody>
</table>

---

\(^1\) The performance values are based on IEC60068-3-5:2001 and IEC60068-3-6:2001.

\(^2\) Performance figures are given for a \(+23\^\circ\text{C}\) ambient temperature, relative humidity of 65\%\pm 20\%\text{rh}, rated voltage, and no specimen inside the test area.

\(^3\) Lowest attainable temperature in an ambient temperature of 0 \text{ to } +30\^\circ\text{C}

\(^4\) When temperature in chamber is \(+20\^\circ\text{C}\)

\(^5\) Excluding protrusions. Dimension indicated in ( ) includes protrusion.

\(^6\) Total weight (temperature & humidity chamber and dehumidifier)
### Model: PCR−3J

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>System</td>
<td>Balanced Temperature and Humidity Control system (BTHC system)</td>
</tr>
<tr>
<td>Temp. &amp; humidity range (^2)</td>
<td>-20 to +100°C/30 to 90%rh Refer to diagram of temperature &amp; humidity controllable range on this page.</td>
</tr>
<tr>
<td>Temp. &amp; humidity fluctuation</td>
<td>±0.5°C/±2.5%rh</td>
</tr>
<tr>
<td>Temperature variation in space</td>
<td>5.0°C</td>
</tr>
<tr>
<td>Temperature rate of change</td>
<td>Heat up rate: 1.5°C/min.</td>
</tr>
<tr>
<td></td>
<td>Pull down rate: 1.0°C/min.</td>
</tr>
<tr>
<td>Temperature extremes</td>
<td>Heat up time: from +20 to +100°C 55 min.</td>
</tr>
<tr>
<td>achievement time</td>
<td>Pull down time: from +20 to −20°C 45 min.</td>
</tr>
<tr>
<td>Cleanliness (^3)</td>
<td>Class5 (Particle diameter: 0.5µm)</td>
</tr>
<tr>
<td>Allowable ambient conditions</td>
<td>+5 to +35°C/up to 75%rh</td>
</tr>
<tr>
<td>Exterior material</td>
<td>Stainless steel plate: 18 Cr stainless steel plate, hairline finish</td>
</tr>
<tr>
<td>Test area material</td>
<td>Stainless steel plate: 18−8 Cr−Ni stainless steel plate, 2B polish</td>
</tr>
<tr>
<td>Heater</td>
<td>Nichrome strip wire heater</td>
</tr>
<tr>
<td>Humidifier</td>
<td>18-12−2.5 Cr−Ni−Mo stainless steel sheathed heater (surface evaporating system)</td>
</tr>
<tr>
<td>Cooler (dehumidifier)</td>
<td>Plate fin cooler (Doubles as dehumidifier)</td>
</tr>
<tr>
<td>Air circulator</td>
<td>Sirocco fan</td>
</tr>
<tr>
<td>System</td>
<td>Mechanical type single-stage compression cooling</td>
</tr>
<tr>
<td>Refrigerant</td>
<td>R404A</td>
</tr>
<tr>
<td>Required exhaust equipment</td>
<td>Exhaust flow rate: 16m(^3)/min. (50Hz);18m(^3)/min. (60Hz); Chamber connection port: ø123mm</td>
</tr>
<tr>
<td>Capacity</td>
<td>312 L</td>
</tr>
<tr>
<td>Chamber total load resistance</td>
<td>100 kg</td>
</tr>
<tr>
<td>Inside dimensions (W x H x D mm)</td>
<td>600 x 650 x 800</td>
</tr>
<tr>
<td>Outside dimensions (W x H x D mm)</td>
<td>1010 x 1880 x 1273</td>
</tr>
<tr>
<td>Weight</td>
<td>445 kg</td>
</tr>
</tbody>
</table>

\(^1\) 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.

\(^2\) Lowest attainable temperature in an ambient temperature of 0 to +30°C

\(^3\) When temperature is stable, the cleanliness is according to JIS B9920:2002 (equivalent to FED-STD-209D Class 100).

The Class 5 cleanliness cannot be maintained when the door is open. Do not open the door when operating at temperatures below 0°C.

\(^4\) Excluding protrusions.

---

**Temperature & Humidity Control Range**

![Temperature & Humidity Control Range](image_url)

- *With no specimen and under ambient temperature at +23°C.
- *Restrictions on continuous humidity operation at +40°C or lower because of frost on the cooler.
## Performance

<table>
<thead>
<tr>
<th>Parameter</th>
<th>PU–1J</th>
<th>PU–2J</th>
<th>PU–3J</th>
<th>PU–4J</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature range *2</td>
<td>−40° C to +100°C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temperature fluctuation</td>
<td>±0.3°C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temperature variation in space</td>
<td>1.5°C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temperature rate of change</td>
<td>Heat up rate: 3.0°C/minute&lt;br&gt;Pull down rate: 2.0°C/minute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temperature extremes achievement time</td>
<td>Heat up time: from +20°C to +100°C 30 minutes&lt;br&gt;Pull down time: from +20°C to −40°C 45 minutes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Allowable heat load *3</td>
<td>850 W</td>
<td>1400 W</td>
<td>1500 W</td>
<td>2850 W</td>
</tr>
</tbody>
</table>

### Allowable ambient conditions

0°C to +40°C up to 75%rh

### Construction

- **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 (dehumidifier)**: Plate fin cooler, stainless steel tube cooler
- **Air circulator**: Cross flow fan, Sirocco fan
- **System**: Mechanical type single-stage compression cooling
- **Refrigerant**: R404A ([R-449A is available on request](#))

### Dimensions

<table>
<thead>
<tr>
<th>Model</th>
<th>PU–1J</th>
<th>PU–2J</th>
<th>PU–3J</th>
<th>PU–4J</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Inside dimensions (W x H x D mm)</strong></td>
<td>500 x 600 x 400</td>
<td>500 x 750 x 600</td>
<td>600 x 850 x 800</td>
<td>1000 x 1000 x 800</td>
</tr>
<tr>
<td><strong>Outside dimensions (W x H x D mm)</strong></td>
<td>910 x 1440 x 873</td>
<td>910 x 1590 x 1073</td>
<td>1010 x 1690 x 1273</td>
<td>1410 x 1840 (1970) x 1273</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>260 kg</td>
<td>330 kg</td>
<td>410 kg</td>
<td>600 kg</td>
</tr>
</tbody>
</table>

*1 The performance values are based on IEC60068-3-5:2001 under the conditions of a +23°C ambient temperature, relative humidity of 65±20%rh, rated voltage, and no specimen inside the test area.
*2 Lowest attainable temperature in an ambient temperature of 0°C to +30°C
*3 When temperature in chamber is +20°C
*4 Excluding protrusions. Dimension indicated in ( ) includes protrusion.
<table>
<thead>
<tr>
<th>Model</th>
<th>PG−2J</th>
<th>PG−4J</th>
</tr>
</thead>
<tbody>
<tr>
<td>System</td>
<td>Balanced Temperature Control system (BTC system)</td>
<td></td>
</tr>
<tr>
<td>Temperature range</td>
<td>−70 to +100°C</td>
<td></td>
</tr>
<tr>
<td>Temperature fluctuation</td>
<td>±0.3°C</td>
<td></td>
</tr>
<tr>
<td>Temperature variation in space</td>
<td>1.5°C</td>
<td></td>
</tr>
<tr>
<td>Temperature rate of change</td>
<td>Heat up rate: 5.0°C/min.  Pull down rate: 2.0°C/min.</td>
<td></td>
</tr>
<tr>
<td>Temperature extremes achievement time</td>
<td>Heat up time: from +20 to +100°C 30 min.  Pull down time: from +20 to −70°C 85 min.</td>
<td></td>
</tr>
<tr>
<td>Allowable heat load</td>
<td>700 W</td>
<td></td>
</tr>
<tr>
<td>Allowable ambient conditions</td>
<td>0 to +40°C/up to 75%rh</td>
<td></td>
</tr>
<tr>
<td>Exterior material</td>
<td>Stainless steel plate: 18 Cr stainless steel plate, hairline finish</td>
<td></td>
</tr>
<tr>
<td>Test area material</td>
<td>Stainless steel plate: 18−8 Cr−Ni stainless steel plate, 2B polish</td>
<td></td>
</tr>
<tr>
<td>Heater</td>
<td>Nichrome strip wire heater</td>
<td></td>
</tr>
<tr>
<td>Cooler (dehumidifier)</td>
<td>Plate fin cooler, stainless steel tube cooler</td>
<td></td>
</tr>
<tr>
<td>Air circulator</td>
<td>Cross flow fan</td>
<td></td>
</tr>
<tr>
<td>System</td>
<td>Mechanical cascade refrigerator system</td>
<td></td>
</tr>
<tr>
<td>Refrigerant</td>
<td>R404A (R-449A is available on request), R508A</td>
<td></td>
</tr>
<tr>
<td>Capacity</td>
<td>306 L</td>
<td></td>
</tr>
<tr>
<td>Chamber total load resistance</td>
<td>100 kg</td>
<td></td>
</tr>
<tr>
<td>Dimensions</td>
<td>Inside dimensions (W x H x D mm) 600 x 850 x 600 1000 x 1000 x 800</td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>460 kg 695 kg</td>
<td></td>
</tr>
</tbody>
</table>

*1 The performance values are based on IEC60068-3-5:2001 under the conditions of a +23°C ambient temperature, relative humidity of 65±20%rh, rated voltage, and no specimen inside the test area.
*2 Lowest attainable temperature in an ambient temperature of 0 to +30°C
*3 When temperature in chamber is +20°C
*4 Excluding protrusions. Dimension indicated in ( ) includes protrusion.

---

**Low GWP Refrigerant**

R-449A is available on request. (PR/PL/PSL/PU/PG only)
**Fittings**

- Drain hose (approx. 1 m) .................................................. 1
- Condenser filter ................................................................. 1
- Cable port (I.D. ø50 mm on the left-side) .............................. 1
- Chamber lamp (bulb-type fluorescent light) ......................... 1
- Casters (free rolling type with leveling feet) ....................... 4
- Time signal terminal ......................................................... 2 contacts
- Specimen power supply control terminal ......................... 1
- Ethernet port (LAN port) ..................................................... 1
- USB memory port .............................................................. 1
- Viewing window ............................................................... 1

Type 1 to 3  W180 × H260 mm  
Type 4  W295 × H380 mm  
- Clean meter (PCR only)  
- Duct meter (PCR only)

**Accessories**

- Glass fuse (7A)  
- Cable port rubber plug (ø50 mm) .................................... 1
- Door key ........................................................................... 2
- Breaker handle stopper ..................................................... 1
- Energy saving slit cover (PHP) ......................................... 1
- Fine wicks (except PU/PG) .............................................. 1 box (24 wicks)
- Cloth wicks (PDR/PDL) ................................................... 1 bag (20 wicks)
- Connection duct (PDR/PDL) ............................................. 2
- Hose band (PDR/PDL) ......................................................... 1
- Operation Manual (CD) ...................................................... 1 set

* Shelves, shelf brackets, and power cables are not included.
# INSTALLATION REQUIREMENTS

## Maximum current (A)

<table>
<thead>
<tr>
<th>Model</th>
<th>PR</th>
<th>PHP</th>
<th>PL</th>
<th>PSL</th>
<th>PDR</th>
<th>PDL</th>
<th>PCR</th>
<th>PU</th>
<th>PG</th>
</tr>
</thead>
<tbody>
<tr>
<td>200V AC 3ø 50/60 Hz *</td>
<td>18.5</td>
<td>20.0</td>
<td>22.0</td>
<td>34.0</td>
<td>17.0</td>
<td>17.8</td>
<td>26.4</td>
<td>22.5</td>
<td>23.0</td>
</tr>
<tr>
<td>220V AC 3ø 60 Hz *</td>
<td>36.0</td>
<td>32.0</td>
<td>48.5</td>
<td>34.0</td>
<td>44.5</td>
<td>35.5</td>
<td>47.0</td>
<td>23.5</td>
<td>14.5</td>
</tr>
<tr>
<td>380V AC 3ø 50 Hz *</td>
<td>17.5</td>
<td>20.0</td>
<td>20.5</td>
<td>31.5</td>
<td>16.1</td>
<td>16.3</td>
<td>24.1</td>
<td>21.0</td>
<td>22.0</td>
</tr>
<tr>
<td>400V AC 3ø 50 Hz *</td>
<td>34.0</td>
<td>30.5</td>
<td>45.5</td>
<td>33.0</td>
<td>42.5</td>
<td>34.5</td>
<td>45.5</td>
<td>22.2</td>
<td>14.0</td>
</tr>
</tbody>
</table>

## Humidifier water supply

Use pure water with a conductivity of 0.1 to 10 μS/cm supplied from the tank.

## Drainage

Drain ports are positioned at the bottom of the rear panel (150 mm above the floor). Prepare 1 drain hose for temperature and humidity use and 1 drain hose for continuous water supply use (option).

Hose outer diameter: 18 mm, inner diameter: 12 mm

Length: approximately 1 m

## Installation space

### Side: A

Space to manipulate the cable port and adjuster feet, to connect the power supply and the water supply and drain pipes, and to perform maintenance is required. (We recommend 30 cm or more.)

### Front: B (cm)

<table>
<thead>
<tr>
<th>Model</th>
<th>PR, PL, PU</th>
<th>PSL, PG</th>
<th>PHP</th>
<th>PDR, PDL</th>
<th>PCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 1</td>
<td>Type 2</td>
<td>Type 3</td>
<td>Type 4</td>
<td>Type 2</td>
<td>Type 3</td>
</tr>
<tr>
<td>Side: A</td>
<td>Space to manipulate the cable port and adjuster feet, to connect the power supply and the water supply and drain pipes, and to perform maintenance is required. (We recommend 30 cm or more.)</td>
<td>70</td>
<td>80</td>
<td>120</td>
<td>80</td>
</tr>
<tr>
<td>Front: B (cm)</td>
<td>60 cm or more</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Rear: C

Space to pass the water drain hose through and to perform maintenance in is required. (We recommend 60 cm or more.)

## Compliance

* Compliance with CE Marking
* The chamber does not come with a power cable.
Utility

Power cable
- 2.5 m
- 5 m
- 10 m
* If this option is not specified, the chamber does not come with a power cable.

Power plug
4P Plug
* 200V AC only.

Power socket
- 100 V 3 A
- 100 V 15 A (excluding Type1)
  Power outlets: 2
  Location: Right-side
* 200V AC only.

Water-cooled refrigeration
To reduce the effect of exhaust heat, this option changes the refrigeration system to a water-cooled condenser.
  Fittings: Compressor cooling fan
  Water supply and drain ports
  Water suspension relay

Continuous water supply
A water circuit to supply pure water continuously to the chamber.
- Water supply coupling (with ion exchanger)
- Pure water coupling with pressure-reducing valve
- Pure water coupling without pressure-reducing valve

<table>
<thead>
<tr>
<th>Water Supply Coupling (With Ion Exchanger)</th>
<th>Pure Water Coupling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water pressure</td>
<td>Flow rate</td>
</tr>
<tr>
<td>0.05 to 0.50 MPa (Gauge)</td>
<td>1.3 L/minute or more</td>
</tr>
<tr>
<td>Conductivity</td>
<td></td>
</tr>
<tr>
<td>0.1 to 10 μS/cm</td>
<td></td>
</tr>
<tr>
<td>Location</td>
<td></td>
</tr>
<tr>
<td>Lower left rear side</td>
<td>Upper left rear side</td>
</tr>
<tr>
<td>Connectable Items</td>
<td></td>
</tr>
</tbody>
</table>
* Connection of the chamber to the water supply equipment shall be performed by the user.
* The ion exchanger must be replaced periodically.

Water purifier (reverse osmosis)
Use to continuously supply pure water.
- WS-1
  Power: AC100V 50/60Hz 0.4A
  AC200V 50/60Hz 0.2A
  AC220V 50/60Hz 0.2A
  AC230V 50/60Hz 0.2A
  Produced water capacity: 12 L/h
  (Water temperature: 25°C)
  Size: W400 × H400 × D280 mm
  Produced water (pure water) supply:
    One or two couplings
  Location: Chamber ceiling

Additional water supply tank
The additional water supply tank complements the water volume of the standard-equipped tank, to allow continuous operations for long periods.
  Effective water volume: Approximately 13L
* When the tank is attached, the chamber height increases by 215mm

Water tank
For supplying water to the chamber’s fixed tank.
- Water tank with cart
  Size: W600 × H920 × D348 mm
  Tank (10 L, with cock) × 3
- Water tanks 10 L × 1
* To prevent damage in the event of water leakage when installing the following optional products, a dew tray (page 34) and other preventive measures can be prepared.
  - Continuous water supply
  - Water purifier
  - Water-cooled refrigeration
Observation

Wide-view door

Almost the entire surface of the door is made of glass for test area inspection, even when testing is on process.
- Upper limit temperature +100°C
- Upper limit temperature +120°C
Effective view:
  - Type 2  W470 × H720 mm
  - Type 3  W570 × H820 mm
  - Type 4  W970 × H970 mm
* Refer to specification sheet for temperature rate of change, extremes achievement time and allowable heat load.
* The door cannot be locked.

Roller blind for wide-view window

Spring screen that can be attached to obscure the view of the inside of the chamber from the viewing window. Shade grade 1 (black)

Electrochromic viewing window

Switching opacity to transparent state by chamber lamp. The test area can be observed while the chamber lamp is on.

Door with hand-in ports

This option features hand-in ports on a standard door, to manipulate the specimen even during testing.
Number of hand-in ports:
  - Type 2: One pair
  - Type 3: One pair
  - Type 4: One pair or two pairs
Hand-in ports’ inner diameter: 130 mm
Accessory: Rubber gloves

Wide-view door with hand-in ports

This option features hand-in ports on a standard door, to manipulate the specimen even during testing.
Hand-in ports’ inner diameter: 130mm
Number of hand-inports: One or two pairs
Accessory: Rubber gloves
* Refer to specification sheet for temperature rate of change, extremes achievement time and allowable heat load.

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.
A glass door is provided between the test area and the chamber door to observe specimens. Select hand-in ports and chamber door viewing window.
Hand-in port: ID 130mm with radial rubber seal & rubber gloves

<table>
<thead>
<tr>
<th>Model</th>
<th>Inner Door</th>
<th>Wipers</th>
<th>Hand-in Ports</th>
</tr>
</thead>
<tbody>
<tr>
<td>Types 1 to 3</td>
<td>Single door</td>
<td>1</td>
<td>1 pair</td>
</tr>
<tr>
<td>Type 4</td>
<td>Hinged double doors</td>
<td>2 pairs</td>
<td>2 pairs</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4 pairs</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>6 pairs</td>
</tr>
</tbody>
</table>

* Inner glass door cannot be installed on the PCR model.
* Wiper's installation differs depending on the configurations.
* Wipers are not provided to chambers controlling only temperature.
* The lock release mechanism equipped as standard on the Type 4 is removed.
* Refer to specification sheet for temperature rate of change, extremes achievement time and temperature variation in space.
Options

Specimen setting

Shelf/shelf bracket

Used to place the specimen inside the chamber.

<Shelf>

• 18-8Cr-Ni Stainless steel

• Resin-coated
  * Upper limit temperature: +100°C
  * PU and PG only

Dimensions & weight:

For Type 1: 350 × 467 mm, 1.0kg
For Type 2: 550 × 467 mm, 1.5kg
For Type 3: 750 × 567 mm, 2.2kg
For Type 4: 750 × 967 mm, 6.6kg
For PSL/PG-2: 550 × 567 mm, 1.6kg

Load capacity for the standard shelf

Type 1: to 10 kg
Type 2: to 30 kg

<Shelf bracket>

• 18-8Cr-Ni Stainless steel
  1 set (2 pieces)

Specimen basket

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

Material: Stainless steel (4 mesh)

• Large
  Dimensions: W700 × H35 × D450 mm
  Load capacity: 5 kg (equally distributed load)
  Qty. per shelf:  Type 3: 1
                Type 4: 2

• Small
  Dimensions: W350 × H35 × D270 mm
  Load capacity: 3 kg (equally distributed load)
  Qty. per shelf:  Type 1: 1
                 Type 2: 2
                 Type 3: 4
                 Type 4: 6

  * Place the specimen baskets on the shelf.
  * Do not use when exceeding the shelf load capacity.
  * Tests may not satisfy standard performance if the air flow is blocked, so ensure sufficient space around the specimen baskets.

Floor reinforcement

Enhances the floor load capacity inside the chamber.

• Up to 100 kg
• Up to 200 kg
• Up to 300 kg

* Standard specification: up to 70 kg

Precision inner chamber

An aluminum box inside the chamber allows to reduce the air velocity and maintain the required temperature and humidity distribution.

Velocity: 0.5 m/sec. or lower

Temperature & humidity fluctuation:

±0.5°C/±2.5%rh

Temperature & humidity distribution:

±0.75°C/±5.0%rh

Effective cross section & load capacity:

Type 1  W335 × H285 mm, up to 20kg
Type 2  W335 × H435 mm, up to 20kg
Type 3  W435 × H585 mm, up to 30kg
Type 4  W835 × H685 mm, up to 30kg

Accessories: Shelves and shelf brackets (2 sets)

* Refer to specification sheet for temperature rate of change, extremes achievement time and allowable heat load.

Heavy-duty shelf

Used to hold heavy specimens.

* To install heavy-duty shelves from 50 kg, reinforcement of the chamber structure is necessary.

Load capacity (per shelf):

• 30kg  (Except PDL/PDR/PCR)
• 50kg  (Except PDL/PDR/PCR)
• 80kg  (Only for type 4, 150°C spec., except PHP/PDR/PDL)
• 100kg  (A set of 5 shelves, only for type 4, except PDR/PDL)

<table>
<thead>
<tr>
<th>Load Capacity per Shelf</th>
<th>Capacity of Shelf</th>
<th>Floor Load Capacity</th>
<th>Chamber’s Total Load Capacity</th>
<th>Shelf Weight (Per Shelf)</th>
<th>Max. Qty. in Chamber</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 kg</td>
<td>90 kg</td>
<td>70 kg</td>
<td>100 kg</td>
<td>Type 1: 1.8 kg</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Type 2: 2.9 kg</td>
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<td></td>
<td>Type 3: 3.3 kg</td>
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<td></td>
<td></td>
<td>PSL/PG-2: 3.4 kg</td>
<td></td>
</tr>
<tr>
<td>50 kg</td>
<td>100 kg</td>
<td>70 kg</td>
<td>100 kg</td>
<td>Type 1: 2.3 kg</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Type 2: 3.4 kg</td>
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<td>Type 3: 5.1 kg</td>
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<td></td>
<td>Type 4: 12.1 kg</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>PSL/PG-2: 4.0 kg</td>
<td></td>
</tr>
<tr>
<td>80 kg</td>
<td>100 kg</td>
<td>70 kg</td>
<td>100 kg</td>
<td>9.3 kg</td>
<td>2</td>
</tr>
<tr>
<td>100 kg</td>
<td>100 kg</td>
<td>70 kg</td>
<td>100 kg</td>
<td>9.3 kg</td>
<td>2</td>
</tr>
</tbody>
</table>

* Weight of shelf (ves) + Specimen on shelf (ves) + Floor + special rack.

Floor Load Capacity

- 30 kg
- 50 kg
- 80 kg
- 100 kg

Chamber’s Total Load Capacity

- 100 kg

Shelf Weight (Per Shelf)

- Type 1: 1.8 kg
- Type 2: 2.9 kg
- Type 3: 3.3 kg
- Type 4: 12.1 kg
- PSL/PG-2: 3.4 kg

Max. Qty. in Chamber

- 3
- 2
- 2
- 5

A special rack is installed in the test area to accommodate 5 shelves (rack weight: 56 kg).
Options

Specimen setting

Additional cable port

Provided in addition/ replacement of the standard cable port (left side). Comes with a cap and a rubber plug.
  - ø25 mm
  - ø50 mm
  - ø70 mm
  - ø100 mm
  - ø150 mm
  - Flat cable port
* When installed on the right side, an external drip pan is also included.

<table>
<thead>
<tr>
<th>Port type</th>
<th>Model</th>
<th>PR</th>
<th>PHP</th>
<th>PL</th>
<th>PSL</th>
<th>PDR</th>
<th>PDL</th>
<th>PCR</th>
<th>PU</th>
<th>PG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left-side (chamber interior)</td>
<td></td>
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<td>○</td>
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<td>○</td>
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</tr>
<tr>
<td>ø50mm around wiring board inside the wall</td>
<td></td>
<td>○</td>
<td>○</td>
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<td>○</td>
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<td>ø100 mm</td>
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<tr>
<td>ø100mm around wiring board inside the wall</td>
<td></td>
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<td>Left</td>
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<td>ø25 mm</td>
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<tr>
<td>Flat cable port</td>
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<td>Ceiling</td>
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<td>○</td>
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<td>ø25 mm</td>
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<td>ø150 mm</td>
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<tr>
<td>Flat cable port</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

● Retrofit is not available. ○ Retrofit is available.

Cable port rubber plug

Comes with the cable port.
  - ø25 mm
  - ø50 mm
  - ø100 mm
  - Spiral-wrapped plug (5 × 50 × 2000 mm)
  - For the flat cable port

Cable port dew tray (for left side)

Catches dew that comes out of the cable port.
Location: Left-side

<table>
<thead>
<tr>
<th>Model</th>
<th>Size (W × Dmm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 1</td>
<td>300×50</td>
</tr>
<tr>
<td>Type 2</td>
<td>510×50</td>
</tr>
<tr>
<td>Type 3</td>
<td>700×50</td>
</tr>
<tr>
<td>PDR/PDL</td>
<td>600×50</td>
</tr>
</tbody>
</table>
## Specimen setting

### EZ connect cable port plug for power supply

Wires that go through this cable port plug have a terminal at both ends. This option ease the power cable connection between specimen and external device.

**Spec.:**

- **AC** 6 to 24V 0.1 to 3A
- **DC** 1.5 to 60V 0.1 to 3A

**Interior terminals:** Terminals on insulated jig plate, 10P

**Exterior terminals:** Block terminals with magnet, 10P

**Temperature/ humidity range:**

-70 to +180°C / 20 to 98%rh

* Based on cable port φ25mm and φ50mm.

![Interior terminal](image1)

![Exterior terminal](image2)

### EZ connect cable port plug for measurement

This port plug equips with a terminal box on interior wall, which facilitates the wiring work inside the test area.

**Spec.:**

- **DC** no more than 500V, 5A

**Terminals:**

- 20ch
- More than $1 \times 10^{12}$Ω as insulation resistance

**Temperature/ humidity range:**

-70 to +150°C / 20 to 98%rh

![Capacitive humidity sensor](image3)

### 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

![Temperature control](image4)

### Capacitive humidity sensor

Attached in place of the wet bulb wick.

**Measurement range:** 0 to 100%rh

**Accuracy:** ±2%rh

(−20 to +40°C and 0 to 90%rh)

### Time up output

This option enables turning the power to the specimen ON or OFF with contact signal output when the time is up by using the timer function on the temperature (humidity) controller.

![Time up output](image5)
Performance

Time signal terminal

Adds additional terminals to the standard time signal terminals.

Temp. & humid. SP attainment output

When the temperature (humidity) in the chamber reaches the set values, the chamber sends out a contact signal. It synchronizes the power supply to the specimen, the timing for measurements or to prevent dew from condensing on the specimens.

Applying DC power supply

Capable of applying voltage to the specimen, used for bias testing. The DC power supply unit synchronizes with constant and program operations, and can be set for each temperature and humidity program step.

<table>
<thead>
<tr>
<th>Voltage setting range</th>
<th>Rated voltage 5V</th>
<th>12V</th>
<th>15V</th>
<th>24V</th>
<th>48V</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rated current 60A</td>
<td>27A</td>
<td>22A</td>
<td>14A</td>
<td>7A</td>
</tr>
</tbody>
</table>

DC inverter refrigeration

Able to reduce power consumption when operating at low temperatures of 0°C or below as well as shorten temperature pull-down time.

- 100°C Specification
- 150°C Specification
- 200V AC only

Upper limit modification

Enables tests over 100°C.

- Upper limit temperature +150°C
- Upper limit temperature +180°C (except PSL-4, PG-4)

* Refer to specification sheet for temperature rate of change, and temperature variation in space.

Lower temperature & humidity range

Testing can be performed at low temperature and humidity (+5°C / 5%rh) where static electricity tends to be generated.

Frost-free circuit

Prevents frost from accumulating on the refrigeration circuit to allow long-term continuous operation. Operating ambient temp. range:

Approx. +10°C to +40°C

* Except the PR-1/PL-1/PU-1/PHP

Defrost circuit

Defrosts the refrigeration circuit.

Airflow adjuster

Used when tests require low airflow velocity or a certain velocity of airflow. Setting value range: 4 levels

Frost relief valve

To reduce frosting on the evaporator during continuous operation at room temperature (25°C) or at a low temperature.
**Options**

### Measurement

**I/O Interface**

Communication ports to connect the chamber to a PC and a device and using communication commands.
- RS-485* (D-sub 9-pin × 2)
- RS-232C (D-sub 9-pin × 1)
- GPIB* (IEEE488)

* Up to 16 chambers can be connected to a single PC.

**Communication cables**

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

**Temperature (humidity) recorder wiring**

Preparation of a power cable, temperature sensor, relative humidity signal and a grounding wire for additional installation in the future.

**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**

Records the temperature and humidity of each section such as the temperature inside the chamber.
- Recording method: Dot
- Recording paper: Effective width 100 mm
- No. of inputs:
  - < Temperature & humidity type >
    - Temperature 5, Humidity 1
      - 50 to +100°C/0 to 100%rh
      - 50 to +150°C/0 to 100%rh
      - 100 to +100°C/0 to 100%rh
      - 100 to +150°C/0 to 100%rh
      - 100 to +200°C/0 to 100%rh
  - < Temperature type >
    - Temperature 6
      - 50 to +100°C
      - 100 to +100°C
      - 100 to +200°C

**Recorder output terminal**

- Temperature, humidity, and heater output
  This terminal outputs the temperature and relative humidity in the test area.
- Dry/wet bulb temperature
  Terminal board for dry-bulb/wet-bulb sensors in the chamber.
- Cloth wicks (gauze)
  For the PDR and PDL: 20 wicks

**Wet bulb wick**

This option contains replacement wicks.
- Fine wicks (non-woven fabric)
  FW-5 (for the PR, PL, PSL, and PHP): 24 wicks
  FW-6 (for the PDR, PDL, and PCR): 24 wicks
  Included: 1 dropper

**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 included.

**Folding table**

A folding table is equipped on the right side of the chamber.
The table can be used when a measuring instrument, PC, or other device is connected.
- Table dimensions: W410 × D300 mm
- Load capacity: 20 kg
**Safety**

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

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

**Alarm output terminal**
If the safety device of the chamber is activated, external alarm terminal will notify it to a remote point.

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)
- Please connect the alarm circuit by customer.
- This option can also be installed inside the electrical compartment. Please inquire for the details.

**Door opening signal output terminal**
Equips the chamber with a terminal that outputs the door open status. Capable of controlling an external device that operates along with door operation and records the temperature disturbance history.

**Status indicator light**
Select light color, lighting, and blinking or buzzer sound.
- 1 level, light: 1 color, height: 534 mm
- 2 levels, light: 2 colors, height: 574 mm
- 3 levels, light: 3 colors, height: 614 mm
- 4 levels, light: 4 colors, height: 654 mm
Pole length: 290 mm
- The pole can be shortened in units of 10 mm to a minimum height of 50 mm.

**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.

**External device alarm input terminal**
Equips the chamber with a terminal that is used to stop the operation of the chamber in the event that an external device to which the chamber is linked malfunctions.

**Emergency stop pushbutton**
Stops the chamber immediately.

**Power key switch**
Used to manage/restrict the chamber usage.

**Power indicator**
The operator can verify if the breaker is ON or OFF from the chamber front.

**Main power switch**
The main power switch allows turning the power ON and OFF from the chamber front.

* 380 V AC and 400 V AC only.
Options

Safety

Pressure relief vent

To reduce an explosive force by releasing pressure when the chamber pressure suddenly goes up. Pressure relief vent: W300 × D300 mm

Outside dimension: 200 mm higher than the standard height.

* The pressure relief port is not intended to guarantee safety against explosion.

Anchoring fixtures

Used to fix the chamber to the floor.

* Anchoring fixtures when installing the dew tray are also available.

Chamber dew tray

A chamber dew tray is installed below the chamber in the unlikely case there would be water leakage.

Dew drip prevention

To prevent dew that has formed on the chamber ceiling from dripping onto specimens.

* The height is 20 mm smaller than the standard inside dimensions.

* Refer to specification sheet for temperature rate of change, extremes achievement time.

Safety door lock

- Dial combination safety door lock

  The dial mechanism gives more secure door locking.

- Lever handle safety door lock

  The rotation mechanism with levers gives more secure door locking.

  * In case of Type 4, unlocking device is not equipped.

Dial combination

Lever handle

Operation panel cover

A cover for the operation panel. (Plastic)

Evaporator frost check window

This window is installed in the test area and is used to check whether frost has accumulated on the cooler.

Diameter: 55 mm
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 chamber. If corrosive substances are generated by the specimen, the life of the chamber may be significantly shortened specifically because of the corrosion of stainless steel and copper and because of the deterioration of resin and silicon. An optional stainless steel evaporator, which is designed to improve the corrosion resistance of the chamber, is available.
- Do not place life forms or substances that exceed allowable heat generation.
- Be sure to read the operation manual before operation.
<table>
<thead>
<tr>
<th>OPTION</th>
<th>PR</th>
<th>PHP</th>
<th>PL</th>
<th>PSL</th>
<th>PDR/PDL</th>
<th>PCR</th>
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<td>DC inverter refrigeration <em>1</em>3*7</td>
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<td>Upper limit modification (+150°C)</td>
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</table>

*1 Applicable only to 200V AC.
*2 Type 3 and 4 only.
*3 Excluding Type 1.
*4 If the chamber has been reinforced, equipment can be added.
*5 Type 4 only.
*6 Excluding Type 4.
*7 Contact us for availability of this option with low GWP refrigerant type product.
<table>
<thead>
<tr>
<th>Page</th>
<th>OPTION</th>
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<th>PL</th>
<th>PSL</th>
<th>PDR/PDL</th>
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*1 Excluding Type 1.
*2 Applicable only to 200V AC.
*3 Type 3 and 4 only.
*4 Applicable only to 380 V/400 V AC.
*5 Type 4 only.
*6 Contact us for availability of this option with low GWP refrigerant type product.
The centralized control system, which is recommended for multiple test chambers users.

You can easily observe the operational status of environmental test chambers by connecting to an existing intranet. With this function, you can also connect to various surrounding devices like network cameras and test devices, and also to test chambers of other manufacturers.

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 product software
- Search for environmental test standards
- Download test profiles from a list of environmental test standards

https://www.test-navi.com/eng/index.html