

Temperature & Humidity Chambers

- › Temp. & Humid. Chambers (Floor Standing)
- › Temp. & Humid. Chambers (Table Top)
- › Pharmaceutical Stability Test Chambers
- › Clean Temp. & Humid. Chamber
- › Plant Growth Chambers



General Applications

Temperature & Humidity Chambers

Test for reliability, durability, climatic, freezing resistance, quality assurance, thermal endurance.

Specific Purpose Chambers

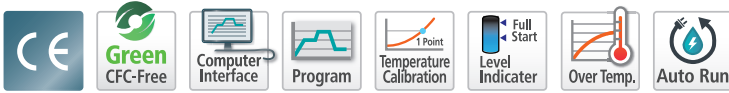
- **Pharmaceutical Stability Test Chambers**
Stability test in accordance with ICH Guideline Q1A (R2) and Q1B (option 2)
- **Clean Environmental Test Chamber**
Designed for the process requiring environmental test in the clean condition. (ISO class 5 air cleanliness as per ISO 14644-1)
- **Plant Growth Chambers**
Optimal photosynthesis condition for plant growth.

| Product Name | | Temperature & Humidity Chambers (Floor Standing Models) | | |
|--------------------|-----------------------------------|--|--|--|
| Model | | TH-G | TH-I | TH-KH |
| Chamber volume (L) | | 189, 302, 408, 800, 1000, 1450 | 189, 302, 408 | 189, 302, 408 |
| Temp. control | Operating temp. range (°C/°F) | -40 to 150 / -40 to 302 | -40 to 150 / -40 to 302 | -70 to 150 / -94 to 302 |
| | Fluctuation (±°C/°F) | 0.3 / 0.54 at 40°C/75%RH | 0.3 / 0.54 at 40°C/75%RH | 0.3 / 0.54 at 40°C/75%RH |
| | Variation (±°C/°F) | 0.5 / 0.9, 0.8 / 1.44 at 40°C/75%RH | 0.5 / 0.9 at 40°C/75%RH | 0.5 / 0.9 at 40°C/75%RH |
| Humid. control | Operating humid. full range (%RH) | 25 to 95 | 20 to 95 | 25 to 95 |
| | Fluctuation (±%RH) | 0.4, 1.0, 2.0 at 75%RH/40°C | 0.4 at 75%RH/40°C | 0.4 at 75%RH/40°C |
| | Variation (±%RH) | 3.0 at 75%RH/40°C | 3.0 at 75%RH/40°C | 3.0 at 75%RH/40°C |
| Control | Timer | Wait on/off | Wait on/off | Wait on/off |
| | Auto-tuning | 0 | 0 | 0 |
| | Program function | 0 | 0 | 0 |
| | Computer interface | RS-232 port, RS-485 port (optional) | RS-232 port, RS-485 port (optional) | RS-232 port, RS-485 port (optional) |
| Safety | Over temp. limit | 0 | 0 | 0 |
| | Door open alarm | 0 | 0 | 0 |
| | Over current limit | 0 | 0 | 0 |
| | Auto-run (power failure) | 0 | 0 | 0 |

| Product Name | | Pharmaceutical Stability Test Chambers | Clean Temp. & Humid. Chamber | Plant Growth Chambers |
|--------------------|-----------------------------------|--|--|--|
| Model | | TH-ICH | TH-CR | GC |
| Chamber volume (L) | | 300, 760 | 270 | 300, 1000 |
| Temp. control | Operating temp. range (°C/°F) | -5 to 85 / 23 to 185 | -35 to 100 / -31 to 212 | 5 to 50 / 41 to 122 - Lamp off 10 to 50 / 50 to 122 - Lamp on |
| | Fluctuation (±°C/°F) | 0.3 / 0.54 at 40°C/60%RH | 0.5 / 0.9 at 40°C/60%RH | 0.4 / 0.72 at 25°C |
| | Variation (±°C/°F) | 0.5, 0.7 / 0.9, 1.3 at 40°C/60%RH | 0.5 / 0.9 at 40°C/60%RH | 1.0 / 1.8 at 25°C |
| Humid. control | Operating humid. full range (%RH) | 20 to 85 | 30 to 90 | 40 to 90 |
| | Fluctuation (±%RH) | 3.0 at 60%RH/40°C | 3.0 at 60%RH/40°C | 3 at 60% RH |
| | Variation (±%RH) | 5.0 at 60%RH/40°C | 3.0 at 60%RH/40°C | - |
| Control | Timer | Wait on/off | Wait on/off | Wait on/off |
| | Auto-tuning | 0 | 0 | 0 |
| | Program function | 0 | 0 | 0 |
| | Computer interface | RS-232 port, RS-485 port (optional) | RS-232 port, RS-485 port (optional) | - |
| Safety | Over temp. limit | 0 | 0 | 0 |
| | Door open alarm | 0 | 0 | 0 |
| | Over current limit | 0 | 0 | 0 |
| | Auto-run (power failure) | 0 | 0 | 0 |

| Temperature & Humidity Chambers (Floor Standing Models) | | | Temperature & Humidity Chambers (Tabletop Models) | | |
|--|-----------------------------|--|--|--|--|
| TH-TG | TH-DG (Dual) | | TH-KE | TH-ME | TH-PE |
| 180, 314, 419 | 770, 997, 1540 | 150 x 2 chambers, 288 x 2 chambers, 384 x 2 chambers | 25, 65, 100 | | |
| -5 to 100 / 23 to 212 | -5 to 100 / 23 to 212 | | -40 to 150 / -40 to 302 | -20 to 150 / -4 to 302 | 0 to 120 / 32 to 248 |
| 0.3 / 0.54 at 40°C/60%RH | 0.3 / 0.54 at 40°C/75%RH | | 0.4, 0.3 / 0.72, 0.54 at 50°C/60%RH | 0.3, 0.2 / 0.54, 0.36 at 25°C/60%RH | 0.2, 0.3 / 0.36, 0.54 at 25°C/60%RH |
| 0.5 / 0.9 at 40°C/60%RH | 0.5 / 0.9 at 40°C/75%RH | | 0.3, 0.4 / 0.54, 0.72 at 50°C/60%RH | 0.6, 0.2 / 1.08, 0.36 at 25°C/60%RH | 0.3 / 0.54 at 25°C/60%RH |
| 10 to 95 | 20 to 95 | 15 to 90 | 20 to 95 | | 30 to 95 |
| 2.0 at 60%RH/40°C | | 0.8 at 75%RH/40°C | 4.1, 2.8, 1.8 at 60%RH/50°C | 2.0, 2.7 at 60%RH/55°C | 1.6, 0.4, 0.5 at 60%RH/55°C |
| 3.0 at 60%RH/40°C | | 3.0 at 75%RH/40°C | 0.9, 1.0, 1.2 at 60%RH/50°C | 0.6, 1.1, 1.2 at 60%RH/55°C | 3.0 at 60%RH/55°C |
| Wait on/off | | Wait on/off | Wait on/off | | |
| 0 | | 0 | 0 | | |
| 0 | | 0 | 0 | | |
| RS-232 port, RS-485 port (optional) | | RS-485 port, RS-232 port (optional) | RS-232 port, RS-485 port (optional) | | |
| 0 | | 0 | 0 | | |
| 0 | | 0 | 0 | | |
| 0 | | 0 | 0 | | |
| 0 | | 0 | 0 | | |

Temperature & Humidity Chambers (Floor Standing - TH-G)

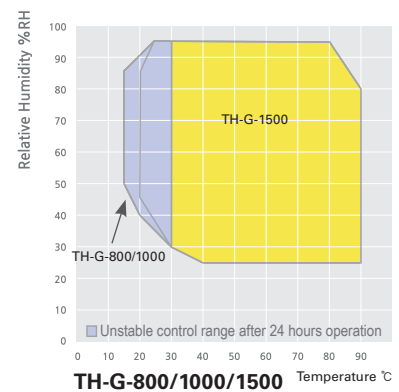
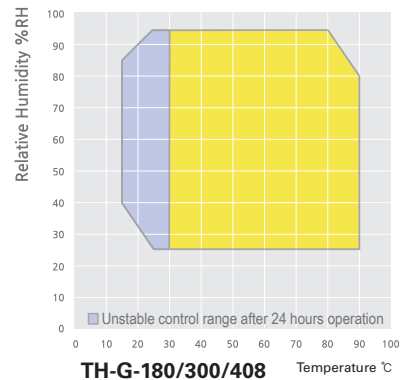


Standard environmental test chamber.
 Highly interactive LCD controller, beneficial for sophisticated long-term test cycles.



Control range

- Temperature range from -40 to 150°C
- Humidity range from 25 to 95% RH



TH-G

with optional recorder

Standard accessories

- Viewing window, Wire shelves, Cable port (Ø50mm)
- Water container, Door key

Optional accessories

see page 242

- Interface converter, Water purifiers, Direct water system

Performance

- Microprocessor PID control / Temperature calibration / Automatic tuning.
- Advanced performance of low and high temperature and humidity control, achieved by adapting the humidification tank exterior to the chamber, added benefit for long term test.
- Water recycling and filtering system reduce water consumption for longer operation.
- Air-tight door closure with perfect sealed packing.
 - Heat-resistant silicone packing completely blocks high heat leakage from the inner chamber.
 - Two-point door latch also enhances tightness to door closure.
- Energy efficiency is achieved by optimization of the insulation system.
 - Even if the unit is operating at max. temperature, the surface of the unit doesn't allow high temperatures of over 60°C.

Safety

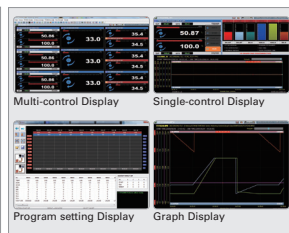
- Built in door lock with a key.
- Automatic shut off after overheat alarm.
- Low and empty water level alarm.
- Power supply leakage breaker.
- Over current protection.
- Open door alarm.

Convenience

- Spacious chamber volume with a maximum capacity of 1500L.
 - Various volume sizes, available to suit any users' need.
- Corrosion resistance stainless steel chamber and electric polished humidification tank.
- Maintenance of water supply are easily performed with a front water tank.
 - Portable water container makes supplying water convenient.
- Water supply during operation is also available for long term test purposes.
- Direct water system provides user great convenience when performing long-term tests. (optional)
- Clear observation of samples.
 - Tempered glass door with built in heating wire.
 - Energy efficient, long life span LED lighting.
 - Wider view, inner glass door is available for monitoring of samples. (optional)
- Cable port for introduction of external probes or wires.
 - 50mm diameter cable port comes standard on the left side of the unit.
 - Additional 50mm or 80mm diameter cable ports, custom ordered. (optional)
- Casters for easy mobility during installation or relocation.
- User friendly LCD controller.
 - 5.7 inch colorful interactive touch type LCD controller.
 - Set value and present value are clearly visible together on display.
 - Operating progress visible in graph mode allow for direct data interpretation.
 - Built-in SD card drive.
 - Trilingual support. (English / Chinese / Korean)
 - Temperature and other operating parameters recorded with use of selectable recorder. (optional)
 - Sufficient programmable control support.



Color LCD controller



Computer interface



Door handle



Portable water container

| Description | No |
|---|--------------------------------|
| Programmable pattern capacity | 120 |
| Pattern repeat time | 999 |
| Max. segments per a pattern | 100 |
| Available max. segments* | 1200 |
| Programmable process time per a segment | 0 to 999hr. 59 min. 59 sec. |

* Even though the max. segments per a pattern are 100, available total segments are up to 1200 not 12000, so you need to arrange the number of segment an patterns properly.

- Computer interface.
 - RS-485 communication port enables connection of up to maximum 9 units. Simultaneous monitoring and operating of multiple units is an available feature. (optional)
 - Program patterns are simple to set with the use of our software.
 - Storage of program information, backup of value settings, recovery, temperature, humidity values.
 - RS-232 communication port comes standard.

Temperature & Humidity Chambers (Floor Standing - TH-G)

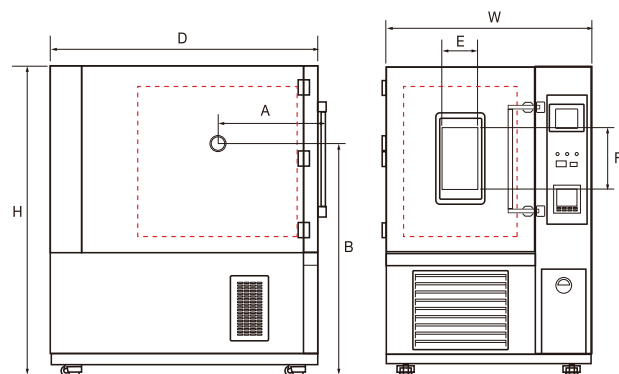
| Model | TH-G-180 | TH-G-300 | TH-G-408 | TH-G-800 | TH-G-1000 | TH-G-1500 | |
|---|---|---|---------------------------------|--|---------------------------------|---|---------------------------------|
| Chamber volume (L / cu ft) | 189 / 7.4 | 302 / 11.9 | 408 / 14.4 | 800 / 28.3 | 1000 / 35.3 | 1450 / 51.2 | |
| Controller | Programmable, Touch screen type controller (5.7" color monitor) | | | | | | |
| Temperature | Range (°C / °F) | -40 to 150 / -40 to 302 without humidity, 15 to 90 / 59 to 194 with humidity * Best programmable control range : -30 to 140 / -22 to 284 | | | | | |
| | Fluctuation ¹⁾ (±°C / °F) at 40°C / 75%RH | 0.3 / 0.54 | | | | | |
| | Variation ¹⁾ (±°C / °F) at 40°C / 75%RH | 0.5 / 0.9 | | | | 0.8 / 1.44 | |
| Time | Heating - without humidity (min.) | 70 from -40°C to 120°C (-40°F to 248°F) | | 70 from -40°C to 120°C (-40°F to 248°F) | | 90 from -40°C to 120°C (-40°F to 248°F) | |
| | Cooling - without humidity (min.) | 75 from 20°C to -40°C (68°F to -40°F) | | 85 from 20°C to -40°C (68°F to -40°F) | | 90 from 20°C to -40°C (68°F to -40°F) | |
| Humidity | Range (%RH) | 25 to 95 ※ See page 216 for more detailed humidity range check. | | | | | |
| | Fluctuation ¹⁾ (±%RH) at 75%RH / 40°C | 0.4 | | 1.0 | | 2.0 | |
| | Variation ¹⁾ (±%RH) at 75%RH / 40°C | 3 | | | | | |
| Refrigeration | System | Mechanical single stage refrigerator system (air-cooled condenser) | | Mechanical dual stage refrigerator system (air-cooled condenser) | | | |
| | Refrigerant | R-507 | | | | | |
| Water Supply | Capacity | 15L (0.53cu ft) - Cartridge type | | | | | |
| | Water quality | pH6.2 to 7.2 / Electrical conductivity 20µs /cm to below | | | | | |
| No. of wire shelves (standard / max.) | 2 / 9 | 2 / 10 | 2 / 10 | 2 / 14 | 2 / 14 | 3 / 18 | |
| Distance of between shelves (mm / inch) | 40 / 1.6 | 40 / 1.6 | 40 / 1.6 | 40 / 1.6 | 40 / 1.6 | 40 / 1.6 | |
| Max. load per shelf (kg / lbs) | 20 / 44.1 | 25 / 55.1 | 25 / 55.1 | 40 / 88.2 | 40 / 88.2 | 40 / 88.2 | |
| Permitted total load (kg / lbs) | 50 / 110.2 | 65 / 143.3 | 65 / 143.3 | 100 / 220.5 | 100 / 220.5 | 100 / 220.5 | |
| Dimension (WxDxH) | Interior (mm / inch) | 500×630×600 / 19.7×24.8×23.6 | 600×630×800 / 23.6×24.8×31.5 | 600×850×800 / 23.6×33.5×31.5 | 1000×800×1000 / 39.4×31.5×39.4 | 1000×1000×1000 / 39.4×39.4×39.4 | 1000×1000×1450 / 39.4×39.4×57.1 |
| | Exterior (mm / inch) | 1003×1139×1468 / 39.5×44.8×57.8 | 1103×1139×1668 / 43.4×44.8×65.7 | 1103×1359×1668 / 43.4×53.5×65.7 | 1503×1319×1968 / 59.2×51.9×77.5 | 1503×1519×1968 / 59.2×59.8×77.5 | 1503×2065×2007 / 59.2×81.3×79.9 |
| | Viewing windows (mm / inch) | 200×330 / 7.9×13 | | 270×330 / 10.6×13 | | | |
| | Net weight (kg / lbs) | 320 / 705.5 | 385 / 848.8 | 410 / 903.9 | 620 / 1366.9 | 680 / 1499.1 | 860 / 1895.9 |
| Cable port | Basically one hole provided / Ø50mm (2") - Optionally max. two holes available / Ø 50 or 80mm (2 or 3.2") | | | | | | |
| Interface port | Basically RS-232C (RS-485-optional) | | | | | | |
| Electrical requirements (230V, 60Hz) | 1ph / 26.3A | | 1ph / 26.7A | | | | |
| Cat. No. | AAH80011K | AAH80021K | AAH80031K | - | - | - | |
| Electrical requirements (230V, 50Hz) | 1ph / 26.3A | | 1ph / 26.7A | | | | |
| Cat. No. | AAH80013K | AAH80023K | AAH80033K | - | - | - | |
| Electrical requirements (380V, 50Hz) | 3ph / 9.1A | | 3ph / 9.2A | | 3ph / 12.2A | 3ph / 15.5A | |
| Cat. No. | AAH80018K | AAH80028K | AAH80038K | AAH80048K | AAH80058K | AAH80078K | |

1) Technical data according to DIN 12880, IEC 60068.

※ Permissible environmental conditions: temperature (18 to 30°C) and relative humidity (up to 85%).

※ All specifications are under ambient temperature 20°C (68°F), No load.

※ FDA establishment registered company. FDA listed products.

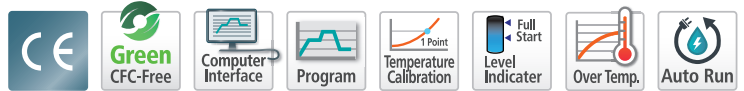


Dimension

| Model | TH-G-180 | TH-G-300 | TH-G-408 |
|----------|-----------------|------------------|------------------|
| Capacity | 189L (7.4cu ft) | 302L (11.9cu ft) | 408L (14.4cu ft) |
| W | 1003mm (39.5") | 1103mm (43.4") | 1103mm (43.4") |
| D | 1139mm (44.8") | 1139mm (44.8") | 1359mm (53.5") |
| H | 1468mm (57.8") | 1668mm (65.7") | 1668mm (65.7") |
| A | 412mm (16.2") | 432mm (17.0") | 532mm (20.9") |
| B | 1110mm (43.7") | 1246mm (49.0") | 1246mm (49.0") |

Dimension

| Model | TH-G-800 | TH-G-1000 | TH-G-1500 |
|----------|------------------|-------------------|-------------------|
| Capacity | 800L (28.3cu ft) | 1000L (35.3cu ft) | 1450L (51.2cu ft) |
| W | 1503mm (59.2") | 1503mm (59.2") | 1503mm (59.2") |
| D | 1319mm (51.9") | 1519mm (59.8") | 2065mm (81.3") |
| H | 1968mm (77.5") | 1968mm (77.5") | 2007mm (79.0") |
| A | 509mm (20.0") | 609mm (23.9") | 482mm (19.0") |
| B | 1465mm (57.7") | 1465mm (57.7") | 1500mm (59.0") |

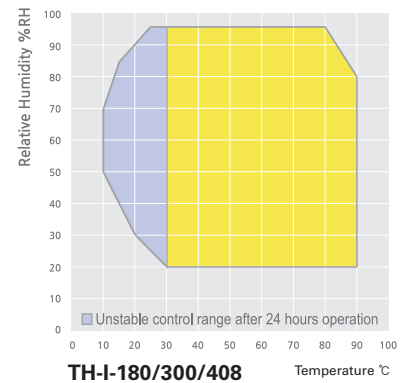


Great low temperature and humidity control performance.



Control range

- Temperature range from -40 to 150°C
- Humidity range from 20 to 95% RH



TH-I

with optional recorder

Standard accessories

- Viewing window, Wire shelves, Cable port (Ø50mm)
- Water container, Door key

Optional accessories see page 242

- Interface converter, Water purifiers, Direct water system

Performance

- Microprocessor PID control / Temperature calibration / Automatic tuning.
- Advanced performance of low and high temperature and humidity control, achieved by adapting the humidification tank exterior to the chamber, added benefit for long term test.
- Water recycling and filtering system reduce water consumption for longer operation.
- Air-tight door closure with perfect sealed packing.
 - Heat-resistant silicone packing completely blocks high heat leakage from the inner chamber.
 - Two-point door latch also enhances tightness to door closure.
- Energy efficiency is achieved by optimization of the insulation system.
 - Even if the unit is operating at max. temperature, the surface of the unit doesn't allow high temperatures of over 60°C.

Safety

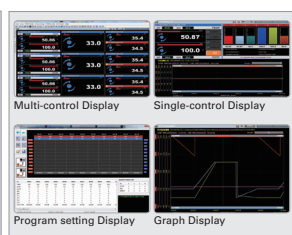
- Built in door lock with a key.
- Automatic shut off after overheat alarm.
- Low and empty water level alarm.
- Power supply leakage breaker.
- Over current protection.
- Open door alarm.

Convenience

- Three different volume sizes are available to suit any users'needs.
- Corrosion resistance stainless steel chamber and electric polished humidification tank.
- Maintenance of water supply are easily performed with a front water tank.
 - Portable water container makes supplying water convenient.
- Water supply during operation is also available for long term test purposes.
- Direct water system provides user great convenience when performing long-term tests. (optional)
- Clear observation of samples.
 - Tempered glass door with built in heating wire.
 - Energy efficient, long life span LED lighting.
 - Wider view, inner glass door is available for monitoring of samples. (optional)
- Cable port for introduction of external probes or wires.
 - 50mm diameter cable port comes standard on the left side of the unit.
 - Additional 50mm or 80mm diameter cable ports, custom ordered. (optional)
- Casters for easy mobility during installation or relocation.
- User friendly LCD controller.
 - 5.7 inch colorful interactive touch type LCD controller.
 - Set value and present value are clearly visible together on display.
 - Operating progress visible in graph mode allow for direct data interpretation.
 - Built-in SD card drive.
 - Trilingual support. (English / Chinese / Korean)
 - Temperature and other operating parameters recorded with use of an selectable recorder. (optional)
 - Sufficient programmable control support.



Color LCD controller



Computer interface



Portable water container



Door handle

| Description | No |
|---|-----------------------------|
| Programmable pattern capacity | 120 |
| Pattern repeat time | 999 |
| Max. segments per a pattern | 100 |
| Available max. segments* | 1200 |
| Programmable process time per a segment | 0 to 999hr 59 min 59 sec |

* Even though the max. segments per a pattern are 100, available total segments are up to 12000 not 120000, so you need to arrange the number of segment an patterns properly.

- Computer interface.
 - RS-485 communication port enables connection of up to maximum 9 units. Simultaneous monitoring and operating of multiple units is an available feature. (optional)
 - Program patterns are simple to set with the use of our software.
 - Storage of program information, backup of value settings, recovery, temperature, humidity values.
 - RS-232 communication port comes standard.

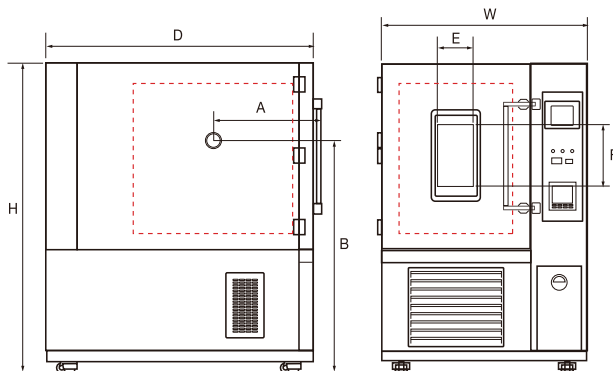
| Model | | TH-I-180 | TH-I-300 | TH-I-408 |
|---|--|---|---------------------------------|---------------------------------|
| Chamber volume (L / cu ft) | | 189 / 7.4 | 302 / 11.9 | 408 / 14.4 |
| Controller | | Programmable, Touch screen type controller (5.7" color monitor) | | |
| Temperature | Range (°C / °F) | -40 to 150 / -40 to 302 without humidity, 15 to 90 / 59 to 194 with humidity * Best programmable control range : -30 to 140 / -22 to 284 | | |
| | Fluctuation ¹⁾ (±°C / °F) at 40°C / 75%RH | 0.3 / 0.54 | | |
| | Variation ¹⁾ (±°C / °F) at 40°C / 75%RH | 0.5 / 0.9 | | |
| Time | Heating - without humidity (min.) | 70 from -40°C to 120°C (40°F to 248°F) | | |
| | Cooling - without humidity (min.) | 75 from 20°C to -40°C (68°F to -40°F) | | |
| Humidity | Range (%RH) | 20 to 95 ※ See page 219 for more detailed humidity range check. | | |
| | Fluctuation ¹⁾ (±%RH) at 75%RH / 40°C | 0.4 | | |
| | Variation ¹⁾ (±%RH) at 75%RH / 40°C | 3 | | |
| Refrigeration | System | Mechanical single stage refrigerator system (air-cooled condenser) | | |
| | Refrigerant | R-507 | | |
| Water Supply | Capacity | 15L (0.53cu ft) - Cartridge type | | |
| | Water quality | pH6.2 to 7.2 / Electrical conductivity 20µs /cm to below | | |
| No. of wire shelves (standard / max.) | | 2 / 9 | 2 / 10 | 2 / 10 |
| Distance of between shelves (mm / inch) | | 40 / 1.6 | 40 / 1.6 | 40 / 1.6 |
| Max. load per shelf (kg / lbs) | | 20 / 44.1 | 25 / 55.1 | 25 / 55.1 |
| Permitted total load (kg / lbs) | | 50 / 110.2 | 65 / 143.3 | 65 / 143.3 |
| Dimension (W×D×H) | Interior (mm / inch) | 500×630×600 / 19.7×24.8×23.6 | 600×630×800 / 23.6×24.8×31.5 | 600×850×800 / 23.6×33.5×31.5 |
| | Exterior (mm / inch) | 1003×1139×1468 / 39.5×44.8×57.8 | 1103×1139×1668 / 43.4×44.8×65.7 | 1103×1359×1668 / 43.4×53.5×65.7 |
| | Viewing windows (mm / inch) | 200×330 / 7.9×13 | | |
| | Net weight (kg / lbs) | 320 / 705.5 | 385 / 848.8 | 410 / 903.9 |
| Cable port | | Basically one hole provided / Ø50mm (2") - Optionally max. two holes available / Ø 50 or 80mm (2 or 3.2") | | |
| Interface port | | Basically RS-232C (RS-485-optional) | | |
| Electrical requirements (230V, 60Hz) | | 1ph / 26.3A | | 1ph / 26.7A |
| Cat. No. | | AAH80111K | AAH80121K | AAH80131K |
| Electrical requirements (230V, 50Hz) | | 1ph / 26.3A | | 1ph / 26.7A |
| Cat. No. | | AAH80113K | AAH80123K | AAH80133K |
| Electrical requirements (380V, 50Hz) | | 3ph / 9.1A | | 3ph / 9.2A |
| Cat. No. | | AAH80118K | AAH80128K | AAH80138K |

1) Technical data according to DIN 12880, IEC 60068.

※ Permissible environmental conditions: temperature (18 to 30°C) and relative humidity (up to 85%).

※ All specifications are under ambient temperature 20°C (68°F), No load.

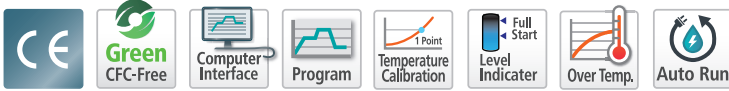
※ FDA establishment registered company. FDA listed products.



Dimension

| Model | TH-I-180 | TH-I-300 | TH-I-408 |
|----------|-----------------|------------------|------------------|
| Capacity | 189L (7.4cu ft) | 302L (11.9cu ft) | 408L (14.4cu ft) |
| W | 1003mm (39.5") | 1103mm (43.4") | 1103mm (43.4") |
| D | 1139mm (44.8") | 1139mm (44.8") | 1359mm (53.5") |
| H | 1468mm (57.8") | 1668mm (65.7") | 1668mm (65.7") |
| A | 412mm (16.2") | 432mm (17.0") | 532mm (20.9") |
| B | 1110mm (43.7") | 1246mm (49.0") | 1246mm (49.0") |

Temperature & Humidity Chambers (Floor Standing - TH-KH)

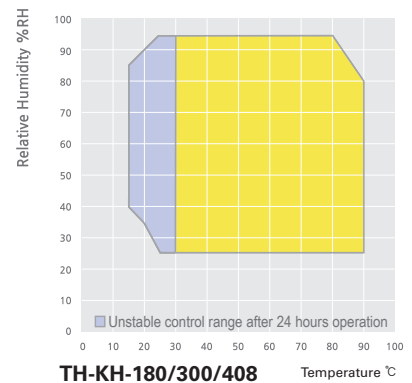


Wide temperature range down to -70°C and high advanced safety features for quality and reliability.



Control range

- Temperature range from -70 to 150°C
- Humidity range from 25 to 95% RH



TH-KH

with optional recorder

Standard accessories

- Viewing window, Wire shelves, Cable port ($\varnothing 50\text{mm}$)
- Water container, Door key

Optional accessories

see page 242

- Interface converter, Water purifiers, Direct water system

Performance

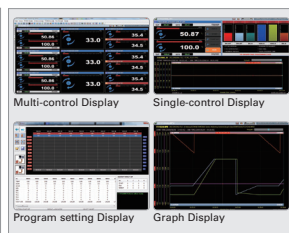
- Microprocessor PID control / Temperature calibration / Automatic tuning.
- Advanced performance of low and high temperature and humidity control, achieved by adapting the humidification tank exterior to the chamber, added benefit for long term test.
- Water recycling and filtering system reduce water consumption for longer operation.
- Air-tight door closure with perfect sealed packing.
 - Heat-resistant silicone packing completely blocks high heat leakage from the inner chamber.
 - Two-point door latch also enhances tightness to door closure.
- Energy efficiency is achieved by optimization of the insulation system.
 - Even if the unit is operating at max. temperature, the surface of the unit doesn't allow high temperatures of over 60°C.

Safety

- Built in door lock with a key.
- Automatic shut off after overheat alarm.
- Low and empty water level alarm.
- Power supply leakage breaker.
- Over current protection.
- Open door alarm.



Color LCD controller



Computer interface



Door handle



Portable water container

Convenience

- Three different volume sizes are available to suit any users' needs.
 - Various volume sizes, available to suit any users' need.
- Corrosion resistance stainless steel chamber and electric polished humidification tank.
- Maintenance of water supply are easily performed with a front water tank.
 - Portable water container makes supplying water convenient.
- Water supply during operation is also available for long term test purposes.
- Direct water system provides user great convenience when performing long-term tests. (optional)
- Clear observation of samples.
 - Tempered glass door with built in heating wire.
 - Energy efficient, long life span LED lighting.
 - Wider view, inner glass door is available for monitoring of samples. (optional)
- Cable port for introduction of external probes or wires.
 - 50mm diameter cable port comes standard on the left side of the unit.
 - Additional 50mm or 80mm diameter cable ports, custom ordered. (optional)
- Casters for easy mobility during installation or relocation.
- User friendly LCD controller.
 - 5.7 inch colorful interactive touch type LCD controller.
 - Set value and present value are clearly visible together on display.
 - Operating progress visible in graph mode allow for direct data interpretation.
 - Built-in SD card drive.
 - Trilingual support. (English / Chinese / Korean)
 - Temperature and other operating parameters recorded with use of selectable recorder. (optional)
 - Sufficient programmable control support.

| Description | No |
|---|-----------------------------|
| Programmable pattern capacity | 120 |
| Pattern repeat time | 999 |
| Max. segments per a pattern | 100 |
| Available max. segments* | 1200 |
| Programmable process time per a segment | 0 to 999hr 59 min 59 sec |

* Even though the max. segments per a pattern are 100, available total segments are up to 1200 not 12000, so you need to arrange the number of segment an patterns properly.

- Computer interface.
 - RS-485 communication port enables connection of up to maximum 9 units. Simultaneous monitoring and operating of multiple units is an available feature. (optional)
 - Program patterns are simple to set with the use of our software.
 - Storage of program information, backup of value settings, recovery, temperature, humidity values.
 - RS-232 communication port comes standard.

Temperature & Humidity Chambers (Floor Standing - TH-KH)

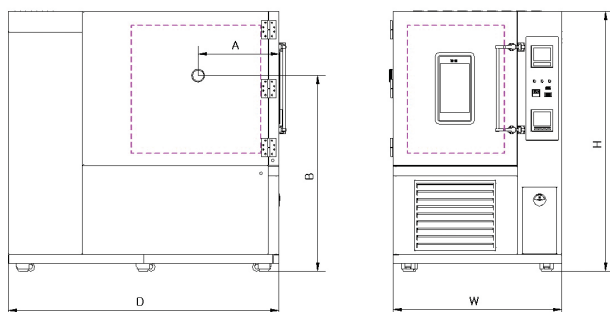
| Model | TH-KH-180 | TH-KH-300 | TH-KH-408 | |
|---|---|---|---------------------------------|---------------------------------|
| Chamber volume (L / cu ft) | 189 / 7.4 | 302 / 11.9 | 408 / 14.4 | |
| Controller | Programmable, Touch screen type controller (5.7" color monitor) | | | |
| Temperature | Range (°C / °F) | -70 to 150 / -94 to 302 without humidity, 15 to 90 / 59 to 194 with humidity * Best programmable control range : -60 to 140 / -76 to 284 | | |
| | Fluctuation ¹⁾ (±°C / °F) at 40°C / 75%RH | 0.3 / 0.54 | | |
| | Variation ¹⁾ (±°C / °F) at 40°C / 75%RH | 0.5 / 0.90 | | |
| Time | Heating - without humidity (min.) | 70 from -70°C to 120°C (96°F to 248°F) | | |
| | Cooling - without humidity (min.) | 80 from 20°C to -70°C (68°F to -96°F) | | |
| Humidity | Range (%RH) | 25 to 95 ※ See page 222 for more detailed humidity range check. | | |
| | Fluctuation ¹⁾ (±%RH) at 75%RH / 40°C | 0.4 | | |
| | Variation ¹⁾ (±%RH) at 75%RH / 40°C | 3.0 | | |
| Refrigeration | System | Mechanical dual stage refrigerator system (air-cooled condenser) | | |
| | Refrigerant | R-507, R-23 | | |
| Water supply | Capacity | 15L (0.53cu ft) - Cartridge type | | |
| | Water quality | pH6.2 to 7.2 / Electrical conductivity 20µs/cm to below | | |
| No. of wire shelves (standard / max.) | 2 / 9 | 2 / 10 | 2 / 10 | |
| Distance of between shelves (mm / inch) | 60 / 2.4 | 60 / 2.4 | 60 / 2.4 | |
| Max. load per shelf (kg / lbs) | 20 / 44.1 | 25 / 55.1 | 25 / 55.1 | |
| Permitted total load (kg / lbs) | 50 / 110.2 | 65 / 143.3 | 65 / 143.3 | |
| Dimension (WxDxH) | Interior (mm / inch) | 500×630×600 / 19.7×24.8×23.6 | 600×630×800 / 23.6×24.8×31.5 | 600×850×800 / 23.6×33.5×31.5 |
| | Exterior (mm / inch) | 1050×1615×1560 / 41.3×63.6×61.4 | 1150×1615×1760 / 45.3×63.6×69.3 | 1150×1835×1760 / 45.3×72.2×69.3 |
| | Viewing windows (mm / inch) | 200×330 / 7.9×13 | | |
| | Net weight (kg / lbs) | 320 / 705.5 | 385 / 848.8 | 410 / 903.9 |
| Cable port | Basically one hole provided / Ø50mm (2") - Optionally max. two holes available / Ø 50 or 80mm (2 or 3.2") | | | |
| Interface port | Basically RS-232C [RS-485-optional] | | | |
| Electrical requirements (380V, 50Hz) | 3ph / 10.1A | | 3ph / 10.2A | |
| Cat. No. | AAHC3014K | AAHC3114K | AAHC3214K | |

1) Technical data according to DIN 12880, IEC 60068.

※ Permissible environmental conditions: temperature (18 to 30°C) and relative humidity (up to 85%).

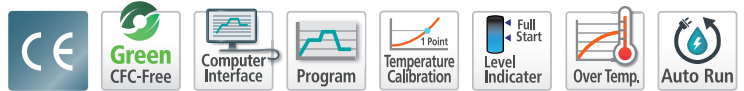
※ All specifications are under ambient temperature 20°C (68°F), No load.

※ FDA establishment registered company. FDA listed products.



Dimension

| Model | TH-KH-180 | TH-KH-300 | TH-KH-408 |
|----------|-----------------|------------------|------------------|
| Capacity | 189L (7.4cu ft) | 302L (11.9cu ft) | 408L (14.4cu ft) |
| W | 1050mm (41.3") | 1150mm (45.3") | 1150mm (45.3") |
| D | 1615mm (63.6") | 1615mm (63.6") | 1835mm (72.2") |
| H | 1560mm (61.4") | 1760mm (69.3") | 1760mm (69.3") |
| A | 550mm (21.7") | 570mm (22.4") | 670mm (26.4") |
| B | 1225mm (48.2") | 1325mm (52.2") | 1325mm (52.2") |

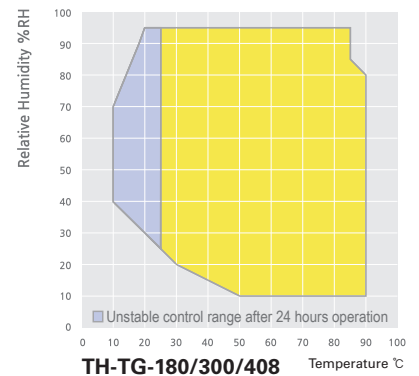


Economy environmental test chamber.
Stability test in accordance with ICH guidelines Q1A (R2)

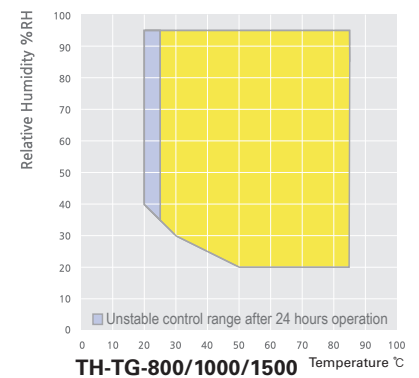


Control range

- Temperature range from -5 to 100°C
- Humidity range from 10 to 95% RH



- Temperature range from -5 to 100°C
- Humidity range from 20 to 95% RH



TH-TG

with optional recorder

Standard accessories

- Viewing window, Wire shelves, Cable port (Ø50mm)
- Water container, Door key

Optional accessories

see page 242

- Interface converter, Water purifiers, Direct water system

Temperature & Humidity Chambers (Floor Standing - TH-TG)

Performance

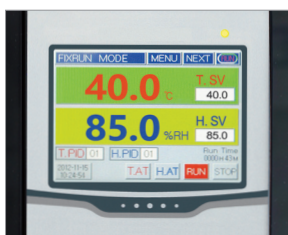
- Microprocessor PID control / Temperature calibration / Automatic tuning
- Advanced performance of low and high temperature and humidity control, achieved by adapting the humidification tank exterior to the chamber, added benefit for long term test.
- Water recycling system reduce water consumption for longer operation.
- Air-tight door closure with perfect sealed packing.
 - Heat-resistant silicone packing completely blocks high heat leakage from the inner chamber.
 - Two-point door latch also enhances tightness to door closure.
- Energy efficiency is achieved by optimization of the insulation system.
 - Even if the unit is operating at max. temperature, the surface of the unit doesn't allow high temperatures of over 60°C.

Safety

- Built in door lock with a key.
- Automatic shut off after overheat alarm.
- Low and empty water level alarm.
- Power supply leakage breaker.
- Over current protection.
- Open door alarm.

Convenience

- Spacious chamber volume with a maximum capacity of 1500L.
 - Various volume sizes, available to suit any users' need.
- Corrosion resistance stainless steel chamber and electric polished humidification tank.
- Maintenance of water supply are easily performed with a front water tank.
 - Portable water container makes supplying water convenient.
- Water supply during operation is also available for long term test purposes.
- Direct water system provides user great convenience when performing long-term tests. (optional)
- Clear observation of samples.
 - Tempered glass door with built in heating wire.
 - Energy efficient, long life span LED lighting.
 - Wider view, inner glass door is available for monitoring of samples. (optional)
- Cable port for introduction of external probes or wires.
 - 50mm diameter cable port comes standard on the left side of the unit.
 - Additional 50mm or 80mm diameter cable ports, custom ordered. (optional)
- Casters for easy mobility during installation or relocation.
- User friendly LCD controller.
 - Colorful interactive touch type LCD controller.
 - Set point temperature and present temperature are clearly shown together on display.
 - Sufficient programmable control support.
 - Operating progress can be shown in graph mode for better data understanding.
 - Automatic start/stop can be programmed for unattended operations.
 - Display indicates abnormal temperature changes or power failures.
 - Selective bilingual language support. (Korean / English or English / Chinese, selectable only when placing an order)
 - Temperature and other operating parameters can be recorded using a six channel digital recorder. (optional)
- Computer interface.
 - RS-485 communication port (optional) enables connection up to maximum 32 units. Simultaneous monitoring and operating of multiple units is an available feature.
 - Program patterns are simple to set with the use of our software.
 - Easy to check status of real-time operations. Graph data supports easy understanding.
 - Storage and documentation of programs.
 - Data with saving capabilities in excel and text format.
 - Storage of program information, backup of value settings, recovery, and temperature values.
 - RS-232 communication port as standard offer.



LCD controller



Computer panel



Viewing window



Portable water container

| Description | No |
|---|---------------------|
| Programmable pattern capacity | 100 |
| Pattern repeat time | 999 |
| Part repeat time | 255 |
| Max. segments per a pattern | 100 |
| Available max. segments* | 2000 |
| Programmable process time per a segment | 0 to 99 hr. 59 min. |

* Even though the max. segments per pattern are 100, the total available segments are up to 2000 not 10000, therefore arrangement of the number of segment and patterns will need to be done properly.

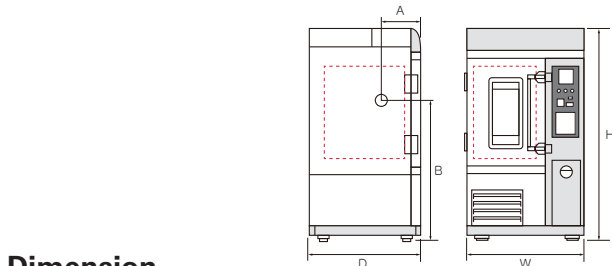
| Model | | TH-TG-180 | TH-TG-300 | TH-TG-408 | TH-TG-800 | TH-TG-1000 | TH-TG-1500 | |
|---|--|--|--------------------------------|---------------------------------|--|---------------------------------|---------------------------------|--|
| Chamber volume (L / cu ft) | | 180 / 6.4 | 314 / 11.1 | 419 / 14.8 | 770 / 27.2 | 997 / 35.2 | 1540 / 54.4 | |
| Controller | | Program controller (LCD type) | | | | | | |
| Temperature | Range | without humidity (°C / °F) | -5 to 100 / 23 to 212 | | | | | |
| | | with humidity (°C / °F) | 10 to 90 / 50 to 194 | | | 20 to 90 / 68 to 194 | | |
| | Fluctuation ¹⁾ (±°C / °F) at 40°C / 60%RH | 0.3 / 0.55 | | | | | | |
| | Variation ¹⁾ (±°C / °F) at 40°C / 60%RH | 0.5 / 0.9 | | | | | | |
| Time | Heating (min.) | 50 (5°C → 100°C) | | | 55 (5°C → 100°C) | | | |
| | Cooling (min.) | 120 (100°C → 5°C) | | | 145 (100°C → 5°C) | | | |
| Humidity | Range (%RH) | 10 to 95 ※ See page 225 for more detailed humidity range check. | | | 20 to 95 ※ See page 225 for more detailed humidity range check. | | | |
| | Fluctuation ¹⁾ (±%RH) at 60%RH / 40°C | 2 | | | | | | |
| | Variation ¹⁾ (±%RH) at 60%RH / 40°C | 3 | | | | | | |
| Refrigeration | System | Air-cooled | | | | | | |
| | Refrigerant | R-507A | | | | | | |
| Water tank | Capacity (L / cu ft) | 15 / 0.53 | | | | | | |
| | Water quality | pH6.2 ~ 7.2, Electrical conductivity 20µs / cm to below | | | | | | |
| No. of wire shelves (standard / max.) | | 2 / 7 | 2 / 8 | 2 / 8 | 2 / 17 | 2 / 17 | 2 / 17 | |
| Distance of between shelves (mm / inch) | | 60 / 2.4 | 60 / 2.4 | 60 / 2.4 | 60 / 2.4 | 60 / 2.4 | 60 / 2.4 | |
| Max. load per shelf (kg / lbs) | | 20 / 44.1 | 25 / 55.1 | 25 / 55.1 | 40 / 88.2 | 40 / 88.2 | 40 / 88.2 | |
| Permitted total load (kg / lbs) | | 50 / 110.2 | 65 / 143.3 | 65 / 143.3 | 100 / 220.5 | 100 / 220.5 | 100 / 220.5 | |
| Dimension (WxDxH) | Interior (mm / inch) | 500×600×600 / 19.7×23.6×23.6 | 748×600×700 / 29.4×23.6×27.6 | 748×800×700 / 29.4×31.5×27.6 | 748×920×1120 / 29.4×36.2×44.1 | 748×1190×1120 / 29.4×46.9×44.1 | 1100×1000×1400 / 43.3×39.4×55.1 | |
| | Exterior (mm / inch) | 952×907×1503 / 37.5×35.7×59.2 | 1201×907×1525 / 47.3×35.7×60.0 | 1201×1107×1525 / 47.3×43.6×60.0 | 120×1228×1993 / 47.3×48.3×78.5 | 1201×1498×1993 / 47.3×59.0×78.5 | 1554×1872×1935 / 61.2×73.7×76.2 | |
| | Viewing window (mm / inch) | 200×330 / 7.9×13 | | | | | | |
| | Net weight (kg / lbs) | 220±10 / 485±22 | 250±10 / 551±22 | 280±10 / 617±22 | 360±10 / 794±22 | 410±10 / 904±22 | 480±10 / 1058±22 | |
| Cable port | | Basically one hole provided / ø 50mm (2"). Optionally max. two holes available / ø 50 or 80mm (2 or 3.2") | | | | | | |
| Interface port | | Basically RS-232C, [RS-485 : optional] | | | | | | |
| Electrical requirements | AC230V, 1ph, 60Hz | 12.3 A | 14.5 A | 14.5 A | 15.4 A | 15.4 A | 25.0A | |
| | Cat.No. | AAHC2001K | AAHC2011K | AAHC2021K | AAHC2031K | AAHC2041K | AAHC2051K | |
| | AC230V, 1ph, 50Hz | 12.3 A | 14.5 A | 14.5 A | 15.4 A | 15.4 A | 25.0A | |
| | Cat.No. | AAHC2002K | AAHC2012K | AAHC2022K | AAHC2032K | AAHC2042K | AAHC2052K | |

1) Technical data according to DIN 12880, IEC 60068.

※ Permissible environmental conditions: temperature (18 to 30°C) and relative humidity (up to 85%).

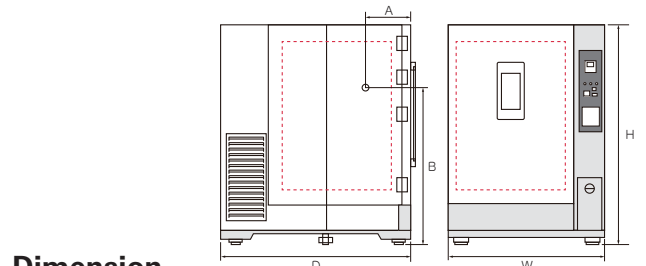
※ All specifications are under ambient temperature 20°C (68°F), No load.

※ FDA establishment registered company. FDA listed products.



Dimension

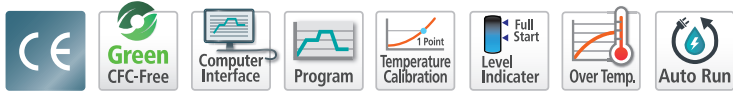
| Model | TH-TG-180 | TH-TG-300 | TH-TG-408 |
|----------|------------------|-------------------|-------------------|
| Capacity | 180L (6.4 cu ft) | 314L (11.1 cu ft) | 419L (14.8 cu ft) |
| W | 952mm (37.5") | 1201mm (47.3") | 1201mm (47.3") |
| D | 907mm (35.7") | 907mm (35.7") | 1107mm (43.6") |
| H | 1503mm (59.2") | 1525mm (60.0") | 1525mm (60.0") |
| A | 321mm (12.6") | 366mm (14.4") | 366mm (14.4") |
| B | 1004mm (39.5") | 1016mm (40.0") | 1016mm (40.0") |



Dimension

| Model | TH-TG-800 | TH-TG-1000 | TH-TG-1500 |
|----------|-------------------|-------------------|--------------------|
| Capacity | 770L (27.2 cu ft) | 997L (35.2 cu ft) | 1540L (54.4 cu ft) |
| W | 1201mm (47.3") | 1201mm (47.3") | 1554mm (61.2") |
| D | 1228mm (48.3") | 1498mm (59.0") | 1872mm (73.7") |
| H | 1993mm (78.5") | 1993mm (78.5") | 1935mm (76.2") |
| A | 385mm (15.2") | 520mm (20.5") | 447mm (17.6") |
| B | 1335mm (52.6") | 1335mm (52.6") | 1384mm (54.5") |

Temperature & Humidity Chambers (Floor Standing - TH-DG)



Environmental test equipment with dual chambers.

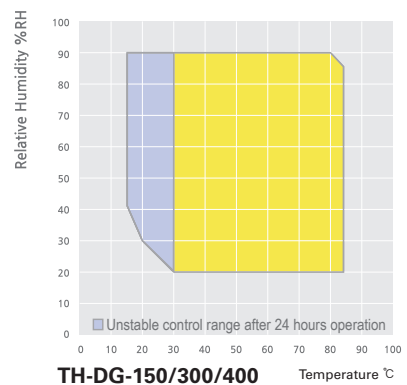
Specially designed for conducting each different experiment at once.

Stability test in accordance with ICH guidelines Q1A (R2)



Control range

- Temperature range from -5 to 100°C
- Humidity range from 15 to 90% RH



TH-DG

with optional recorder

Standard accessories

- Viewing window, Wire shelves, Cable port (Ø50mm)
- Water container, Door key

Optional accessories

see page 242

- Interface converter, Water purifiers, Direct water system



Efficient lab space use with dual chamber

- Designed to offer an ideal and cost-effective solution for laboratories with limited space and budget.
 - Two chambers merged into a single unit.
- Optimum model selection between three sized chambers according to application demand.
- Suitable for conducting each different experiment at once.
 - Independent temperature and humidity control of each chamber using microprocessor PID.

Performance

- Microprocessor PID control / Temperature calibration / Automatic tuning.
- Advanced performance of low and high temperature and humidity control, achieved by adapting the humidification tank exterior to the chamber, added benefit for long term test.
- Water recycling system reduce water consumption for longer operation.
- Air-tight door closure with perfect sealed packing.
 - Heat-resistant silicone packing completely blocks high heat leakage from the inner chamber.
 - Two-point door latch also enhances tightness to door closure.
- Energy efficiency is achieved by optimization of the insulation system.
 - Even if the unit is operating at max. temperature, the surface of the unit doesn't allow high temperatures of over 60°C.

Safety

- Built in door lock with a key.
- Automatic shut off after overheat alarm.
- Low and empty water level alarm.
- Power supply leakage breaker.
- Over current protection.
- Open door alarm.



Viewing window



Door key lock



Two-point door latch

Convenience

- Three different volume sizes are available to suit any users' needs.
- Corrosion resistance stainless steel chamber and electric polished humidification tank.
- Water supply during operation is also available for long term test purposes.
- Direct water system provides user great convenience when performing long-term tests. (optional)
- Clear observation of samples.
 - Tempered glass door with built in heating wire.
 - Energy efficient, long life span LED lighting.
- Cable port for introduction of external probes or wires.
 - 50mm diameter cable port comes standard on the unit.
 - Additional 50mm or 80mm diameter cable ports, custom ordered. (optional)
- Casters for easy mobility during installation or relocation.
- User friendly LCD controller.
 - Colorful interactive touch type LCD controller.
 - Set point temperature and present temperature are clearly shown together on display.
 - Sufficient programmable control support.
 - Operating progress can be shown in graph mode for better data understanding.
 - Automatic start/stop can be programmed for unattended operations.
 - Display indicates abnormal temperature changes or power failures.
 - Selective bilingual language support.
 - (Korean / English or English / Chinese, selectable only when placing an order)
 - Temperature and other operating parameters can be recorded using a six channel digital recorder. (optional)
- Computer interface.
 - RS-485 communication port enables connection up to maximum 32 units. Simultaneous monitoring and operating of multiple units is an available feature.
 - Program patterns are simple to set with the use of our software.
 - Easy to check status of real-time operations. Graph data supports easy understanding.
 - Storage and documentation of programs.
 - Data with saving capabilities in excel and text format.
 - Storage of program information, backup of value settings, recovery, and temperature values.
 - RS-232 communication port (optional)

| Description | No |
|---|---------------------|
| Programmable pattern capacity | 100 |
| Pattern repeat time | 999 |
| Part repeat time | 255 |
| Max. segments per a pattern | 100 |
| Available max. segments* | 2000 |
| Programmable process time per a segment | 0 to 99 hr. 59 min. |

* Even though the max. segments per pattern are 100, the total available segments are up to 2000 not 10000, therefore arrangement of the number of segment and patterns will need to be done properly.

Temperature & Humidity Chambers (Floor Standing - TH-DG)

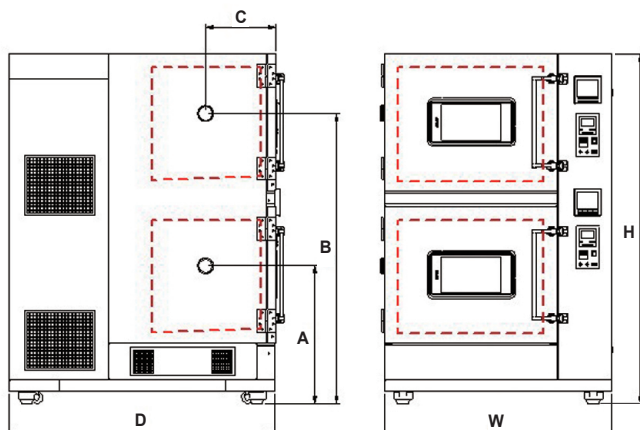
| Model | TH-DG-150 | TH-DG-300 | TH-DG-400 | |
|---|--|--|---------------------------------|---------------------------------|
| Chamber volume (L / cu ft) | 150 / 5.30 x 2 chambers | 288 / 10.17 x 2 chambers | 384 / 13.56 x 2 chambers | |
| Controller | PID control (LCD Type) | | | |
| Temperature | Range (°C / °F) | -5 to 100 / 23 to 212 without humidity, 15 to 90 / 59 to 194 with humidity | | |
| | Fluctuation ¹⁾ (±°C / °F) at 40°C / 75%RH | 0.3 / 0.55 | | |
| | Variation ¹⁾ (±°C / °F) at 40°C / 75%RH | 0.5 / 0.9 | | |
| Time | Heating - without humidity (min.) from -5°C to 100°C | 85 | | |
| | Cooling - without humidity (min.) from 100°C to -5°C | 100 | | |
| Humidity | Range (%RH) | 15 to 90 ※ See page 228 for more detailed humidity range check. | | |
| | Fluctuation ¹⁾ (±%RH) at 75%RH / 40°C | 0.8 | | |
| | Variation ¹⁾ (±%RH) at 75%RH / 40°C | 3.0 | | |
| Refrigeration | System | Air - cooled | | |
| | Refrigerant | R- 507A | | |
| Water Supply | Capacity (L / cu ft) | 20 / 0.70 | 24 / 0.84 | |
| | Water quality | pH6.2 to 7.2 / Electrical conductivity 20µs /cm to below | | |
| No. of wire shelves (standard / max.) | 2 / 7 | 2 / 8 | 2 / 8 | |
| Distance of between shelves (mm / inch) | 60 / 2.4 | 60 / 2.4 | 60 / 2.4 | |
| Max. load per shelf (kg / lbs) | 25 / 55.1 | 25 / 55.1 | 25 / 55.1 | |
| Permitted total load (kg / lbs) | 75 / 165.3 | 75 / 165.3 | 75 / 165.3 | |
| Dimension (WxDxH) | Interior (mm / inch) | 600x500x500 / 23.6x19.7x19.7 | 800x600x600 / 31.5x23.6x23.6 | 800x600x800 / 31.5x23.6x31.5 |
| | Exterior (mm / inch) | 1055x1320x1725 / 41.5x52.0x67.9 | 1255x1470x1925 / 49.4x57.9x75.8 | 1255x1670x1925 / 49.4x65.7x75.8 |
| | Viewing windows (mm / inch) | 200x330 / 7.9x13 *2set | | |
| | Net weight (kg / lbs) | 420 / 925.9 | 516 / 1137.6 | 560 / 1234.6 |
| Cable port | Basically one hole provided / ø50mm (2") - Optionally max. two holes available / ø 50 or 80mm (2 or 3.2") | | | |
| Interface port | Basically RS-485C [RS-232-optional] | | | |
| Electrical requirements (230V, 60Hz) | 1ph / 13.6 A x 2ea | | 1ph / 17.5 A x 2ea | |
| Cat. No. | AAHC6001K | AAHC6011K | AAHC6021K | |
| Electrical requirements (230V, 50Hz) | 1ph / 13.6 A x 2ea | | 1ph / 17.5 A x 2ea | |
| Cat. No. | AAHC6002K | AAHC6012K | AAHC6022K | |

1) Technical data according to DIN 12880, IEC 60068.

※ Permissible environmental conditions: temperature (18 to 30°C) and relative humidity (up to 85%).

※ All specifications are under ambient temperature 20°C (68°F), No load.

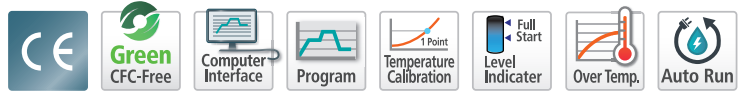
※ FDA establishment registered company. FDA listed products.



Dimension

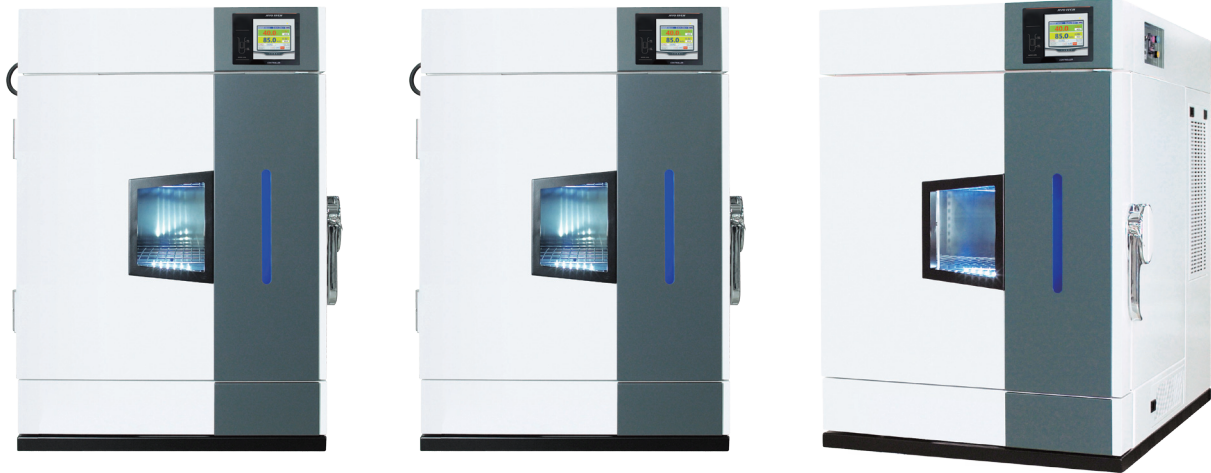
| Model | TH-DG-150 | TH-DG-300 | TH-DG-400 |
|----------|------------------|-------------------|-------------------|
| Capacity | 150L (5.30cu ft) | 288L (10.17cu ft) | 384L (13.56cu ft) |
| W | 1055mm (41.5") | 1255mm (49.4") | 1255mm (49.4") |
| D | 1320mm (52.0") | 1470mm (57.9") | 1670mm (65.7") |
| H | 1725mm (67.9") | 1925mm (75.8") | 1925mm (75.8") |
| A | 710mm (28.0") | 760mm (29.9") | 760mm (29.9") |
| B | 1450mm (57.1") | 1600mm (63.0") | 1600mm (63.0") |
| C | 345mm (13.6") | 385mm (15.2") | 485mm (19.1") |

Temperature & Humidity Chambers (Tabletop - TH-KE /TH-ME /TH-PE)



Light weight and compact design with high performance.

Various environmental tests can be performed due to wide temperature and humidity control range.



TH-KE / TH-ME / TH-PE

Standard accessories • Viewing window, Wire shelves, Cable port (Ø50mm), Door key

Optional accessories • Two step stands, Direct water system

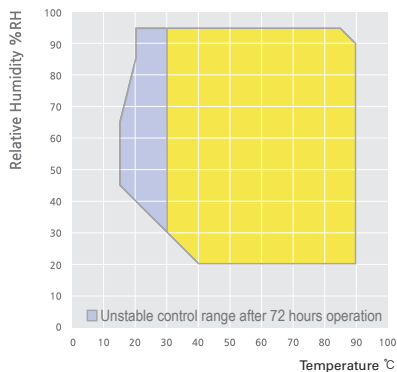
see page 242

※ Above products design can be changed without prior notice.

※ Inner glass door is not equipped to the unit since 2013.

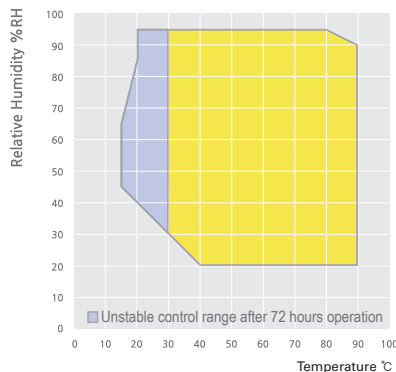
TH-KE

• Temperature range from -40 to 150°C
Humidity range from 20 to 95% RH



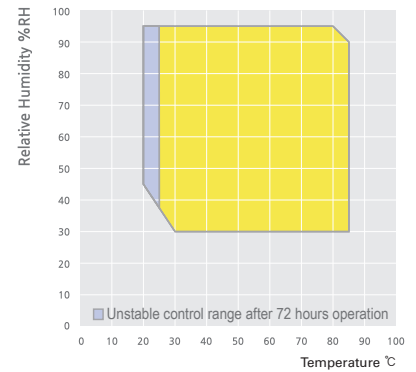
TH-ME

• Temperature range from -20 to 150°C
Humidity range from 20 to 95% RH



TH-PE

• Temperature range from 0 to 120°C
Humidity range from 30 to 95% RH



Performance

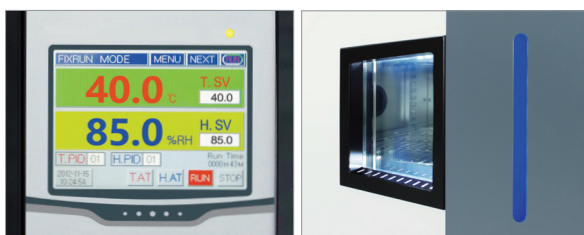
- Microprocessor PID control / Temperature calibration / Automatic tuning.
- Uniform temperature and humidity control guarantees reliable test result.
- Air-tight door closure with perfect sealed packing.
 - Heat-resistant silicone packing completely blocks high heat leakage from the inner chamber.
- Maintenance of water supply is easily performed.
 - Water level condition is easy to check by the water level indicator on the front control panel.
- Water supply during operation is also available for long term test purposes.
- Direct water system provides user great convenience when performing long-term tests. (optional)

Safety

- Built in door lock with a key.
- Automatic shut off after overheat alarm.
- Low and empty water level alarm.
- Power supply leakage breaker.
- Over current protection.
- Open door alarm.

Convenience

- Compact design and quite operation.
- Three different size models are available to suit user's need.
- Corrosion resistance stainless steel chamber.
- Operating condition is clearly noticed by front LED indicator.
 - Three different colored lights show each status of running, stop, and power off condition.
- Clear observation of samples.
 - Tempered glass window with wire heater and lighting provides a clear view of samples in the chamber, beneficial for during testing.
- Cable port for introduction of external probes or wires.
 - 50mm diameter cable port comes standard on the left side of the unit.
 - Additional 50mm or 80mm diameter cable ports, custom ordered. (optional)
- Two type of stands for space-saving. (optional)
 - Single stand with a drawer provides enough storage space.
 - Two step stand accepts loading two units to save limited space.
- User friendly LCD controller.
 - Colorful interactive touch type LCD controller.
 - Set point temperature and present temperature are clearly shown together on display.
 - Sufficient programmable control support.
 - Operating progress can be shown in graph mode for better data understanding.
 - Automatic start/stop can be programmed for unattended operations.
 - Display indicates abnormal temperature changes or power failures.
 - Selective bilingual language support.
(Korean / English or English / Chinese, selectable only when placing an order)
 - Temperature and other operating parameters can be recorded using a six channel digital recorder. (optional)
- Computer interface.
 - RS-485 communication port (optional) enables connection up to maximum 32 units. Simultaneous monitoring and operating of multiple units is an available feature.
 - Program patterns are simple to set with the use of our software.
 - Easy to check status of real-time operations. Graph data supports easy understanding.
 - Storage and documentation of programs.
 - Data with saving capabilities in excel and text format.
 - Storage of program information, backup of value settings, recovery, and temperature values.
 - RS-232 communication port as standard offer.



LCD controller

Viewing window



Stand with caster (optional)

| Description | No |
|---|---------------------|
| Programmable pattern capacity | 100 |
| Pattern repeat time | 999 |
| Part repeat time | 255 |
| Max. segments per a pattern | 100 |
| Available max. segments* | 2000 |
| Programmable process time per a segment | 0 to 99 hr. 59 min. |

* Even though the max. segments per pattern are 100, the total available segments are up to 2000 not 10000, therefore arrangement of the number of segment and patterns will need to be done properly.

| Model | | TH-KE-025 | TH-KE-065 | TH-KE-100 |
|---|--|---|-----------------------------------|-----------------------------------|
| Chamber volume (L / cu ft) | | 25 / 0.9 | 65 / 2.3 | 100 / 3.5 |
| Controller | | Program controller (LCD type) | | |
| Temperature | Range (°C / °F) | -40 to 150 / -40 to 302 without humidity 15 to 90 / 59 to 194 with humidity | | |
| | Fluctuation ¹⁾ (±°C / °F) at 50°C / 60%RH | 0.4 / 0.72 | 0.4 / 0.72 | 0.3 / 0.54 |
| | Variation ¹⁾ (±°C / °F) at 50°C / 60%RH | 0.3 / 0.54 | 0.4 / 0.72 | 0.4 / 0.72 |
| Time | Heating - without humidity (min.) from -40°C to 100°C | 60 | | |
| | Cooling - without humidity (min.) from 20°C to -40°C | 65 | 92 | 90 |
| Humidity | Range (%RH) | 20 to 95 ※ See page 231 for more detailed humidity range check. | | |
| | Fluctuation ¹⁾ (±%RH) at 60%RH / 50°C | 4.1 | 2.8 | 1.8 |
| | Variation ¹⁾ (±%RH) at 60%RH / 50°C | 0.9 | 1.0 | 1.2 |
| Refrigeration | System | Mechanical single stage refrigerator system (air-cooled condenser) | | |
| | Refrigerant | R-507A | | |
| Water tank | Capacity (L / cu ft) | 7.5 / 0.26 | 10 / 0.35 | 14.5 / 0.51 |
| | Water quality | pH6.2 ~ 7.2, Electrical conductivity 20°C / cm to below | | |
| No. of wire shelves (standard / max.) | | 2 / 7 | 2 / 10 | 2 / 10 |
| Distance of between shelves (mm / inch) | | 20 / 1.6 | 20 / 1.6 | 20 / 1.6 |
| Max. load per shelf (kg / lbs) | | 25 / 55.1 | 25 / 55.1 | 25 / 55.1 |
| Permitted total load (kg / lbs) | | 65 / 143.3 | 65 / 143.3 | 65 / 143.3 |
| Dimension (WxDxH) | Interior (mm / inch) | 348×220×353 / 13.7×8.7×13.9 | 398×330×498 / 15.7×13×19.6 | 498×390×538 / 19.6×15.4×21.2 |
| | External (mm / inch) | 611×878×911 / 24.1×34.6×36.2 | 660×1048×1056 / 23.7×41.2×41.6 | 761×1108×1096 / 30.0×43.6×43.1 |
| | Viewing window (mm / inch) | 220×300 / 8.7×11.8 | | |
| | Net weight (kg / lbs) | 110 ±10 / 242.5 ±22 | 140 ±10 / 308.6 ±22 | 150 ±10 / 330.7 ±22 |
| Cable port ²⁾ | | Basically one hole provided / ø 50mm (2") Optionally max. two holes available / ø 50 or 80mm (2 or 3.2") | | |
| Interface port | | Basically RS-232C, (RS-485: optional) | | |
| Electrical requirements (AC230V, 1ph, 60Hz) | | 10.1A | 12.4A | 16A |
| Cat. No. | | AAH82411K | AAH82421K | AAH82431K |
| Electrical requirements (AC230V, 1ph, 50Hz) | | 10.1A | 12.4A | 16A |
| Cat. No. | | AAH82412K | AAH82422K | AAH82432K |

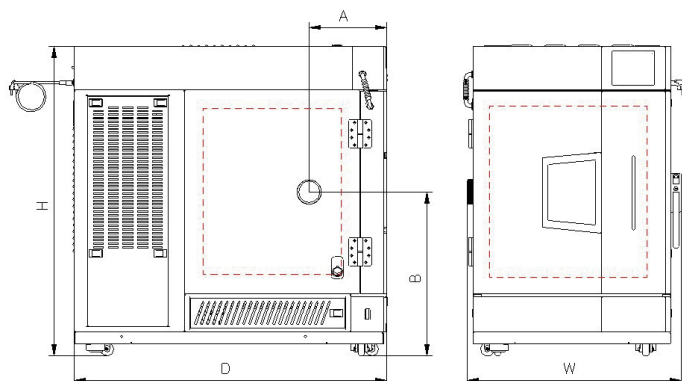
1) Technical data according to DIN 12880, IEC 60068.

2) 80mm cable access hole is NOT available for 25L chamber.

※ Permissible environmental conditions: temperature (18 to 30°C) and relative humidity (up to 85%).

※ All specifications are under ambient temperature 20°C (68°F), No load.

※ FDA establishment registered company. FDA listed products.



Dimension

| Model | TH-KE-25 | TH-KE-65 | TH-KE-100 |
|-----------------|----------------|----------------|------------------|
| Capacity | 25L(0.9 cu ft) | 65L(2.3 cu ft) | 100L(3.53 cu ft) |
| W | 611mm(24.1") | 660mm(26.0") | 761mm(30.0") |
| D | 878mm(34.6") | 1048mm(41.3") | 1108mm(43.6") |
| H | 911mm(36.2") | 1056mm(41.6") | 1096mm(43.1") |
| A | 211mm(8.3") | 276mm(10.9") | 276mm(10.9") |
| B | 495mm(19.5") | 580mm(22.8") | 580mm(22.8") |

Temperature & Humidity Chambers (Tabletop - TH-KE /TH-ME /TH-PE)

| Model | | TH-ME-025 | TH-ME-065 | TH-ME-100 |
|---|--|---|-----------------------------------|-----------------------------------|
| Chamber volume (L / cu ft) | | 25 / 0.9 | 65 / 2.3 | 100 / 3.5 |
| Controller | | Program controller (LCD type) | | |
| Temperature | Range (°C / °F) | -20 to 150 / -4 to 302 without humidity 15 to 90 / 59 to 194 with humidity | | |
| | Fluctuation ¹⁾ (±°C / °F) at 25°C / 60%RH | 0.3 / 0.54 | 0.2 / 0.36 | 0.2 / 0.36 |
| | Variation ¹⁾ (±°C / °F) at 25°C / 60%RH | 0.6 / 1.08 | 0.2 / 0.36 | 0.2 / 0.36 |
| Time | Heating - without humidity (min.) from -20°C to 120°C | 60 | 67 | 73 |
| | Cooling - without humidity (min.) from 120°C to -20°C | 174 | 144 | 153 |
| Humidity | Range (%RH) | 20 to 95 * See page 231 for more detailed humidity range check. | | |
| | Fluctuation ¹⁾ (±%RH) at 60%RH / 55°C | 2.0 | 2.7 | 2.7 |
| | Variation ¹⁾ (±%RH) at 60%RH / 55°C | 0.6 | 1.1 | 1.2 |
| Refrigeration | System | Mechanical single stage refrigerator system (air-cooled condenser) | | |
| | Refrigerant | R-507A | | |
| Water tank | Capacity (L / cu ft) | 7.5 / 0.26 | 10 / 0.35 | 14.5 / 0.51 |
| | Water quality | pH6.2 to 7.2 / Electrical conductivity 20°C/cm to below | | |
| No. of wire shelves (standard / max.) | | 2 / 7 | 2 / 10 | 2 / 10 |
| Distance of between shelves (mm / inch) | | 20 / 1.6 | 20 / 1.6 | 20 / 1.6 |
| Max. load per shelf (kg / lbs) | | 25 / 55.1 | 25 / 55.1 | 25 / 55.1 |
| Permitted total load (kg / lbs) | | 65 / 143.3 | 65 / 143.3 | 65 / 143.3 |
| Dimension (WxDxH) | Interior (mm / inch) | 348x220x353 / 13.7x8.7x13.9 | 398x330x498 / 15.7x13x19.6 | 498x390x538 / 19.6x15.4x21.2 |
| | External (mm / inch) | 611x878x911 / 24.1x34.6x36.2 | 660x1048x1056 / 23.7x41.2x41.6 | 761x1108x1096 / 30.0x43.6x43.1 |
| | Viewing window (mm / inch) | 220x300 / 8.7x11.8 | | |
| | Net weight (kg / lbs) | 80±5 / 176±11 | 110±5 / 242±11 | 130±5 / 286±11 |
| Cable port ²⁾ | | Basically one hole provided / ø 50mm (2") Optionally max. two holes available / ø 50 or 80mm (2 or 3.2") | | |
| Interface port | | Basically RS-232C (RS-485 optional) | | |
| Electrical requirements (230V, 1ph, 60Hz) | | 9.6A | 12A | 15.5A |
| Cat. No. | | AAH82111K | AAH82121K | AAH82131K |
| Electrical requirements (230V, 1ph, 50Hz) | | 9.6A | 12A | 15.5A |
| Cat. No. | | AAH82112K | AAH82122K | AAH82132K |

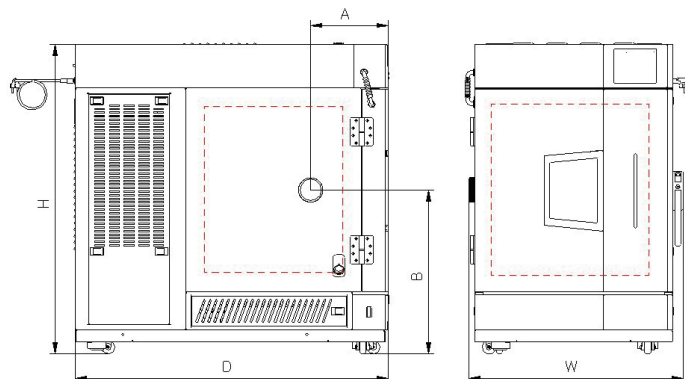
1) Technical data according to DIN 12880, IEC 60068.

2) 80mm cable access hole is NOT available for 25L chamber.

* Permissible environmental conditions: temperature (18 to 30°C) and relative humidity (up to 85%).

* All specifications are under ambient temperature 20°C (68°F), No load.

* FDA establishment registered company. FDA listed products.



Dimension

| Model | TH-ME-25 | TH-ME-65 | TH-ME-100 |
|-----------------|----------------|----------------|------------------|
| Capacity | 25L(0.9 cu ft) | 65L(2.3 cu ft) | 100L(3.53 cu ft) |
| W | 611mm(24.1") | 660mm(26.0") | 761mm(30.0") |
| D | 878mm(34.6") | 1048mm(41.3") | 1108mm(43.6") |
| H | 911mm(36.2") | 1056mm(41.6") | 1096mm(43.1") |
| A | 211mm(8.3") | 276mm(10.9") | 276mm(10.9") |
| B | 495mm(19.5") | 580mm(22.8") | 580mm(22.8") |

| Model | | TH-PE-025 | TH-PE-065 | TH-PE-100 |
|---|---|---|-----------------------------------|-----------------------------------|
| Chamber volume (L / cu ft) | | 25 / 0.9 | 65 / 2.3 | 100 / 3.5 |
| Controller | | Program controller (LCD type) | | |
| Temperature | Range (°C / °F) | 0 to 120 / 32 to 248 without humidity 15 to 90 / 59 to 194 with humidity | | |
| | Fluctuation ¹⁾ (±°C / °F) at 25°C / 60%RH | 0.2 / 0.36 | 0.3 / 0.54 | 0.2 / 0.36 |
| | Variation ¹⁾ (±°C / °F) at 25°C / 60%RH | 0.3 / 0.54 | | |
| Time | Heating - without humidity (min.) from 0°C to 120°C | 40 | | |
| | Cooling - without humidity (min.) from 20°C to 0°C | 30 | | |
| Humidity | Range (%RH) | 30 to 95 ※ See page 231 for more detailed humidity range check. | | |
| | Fluctuation ¹⁾ (±%RH) at 60%RH / 55°C | 1.6 | 0.4 | 0.5 |
| | Variation ¹⁾ (±%RH) at 60%RH / 55°C | 3.0 | | |
| Refrigeration | System | Mechanical single stage refrigerator system (air-cooled condenser) | | |
| | Refrigerant | R-404A | | |
| Water tank | Capacity (L / cu ft) | 75 / 0.26 | 10 / 0.35 | 14.5 / 0.51 |
| | Water quality | pH6.2 ~ 7.2, Electrical conductivity 20°C / cm to below | | |
| No. of wire shelves (standard / max.) | | 2 / 7 | 2 / 10 | 2 / 10 |
| Distance of between shelves (mm / inch) | | 20 / 1.6 | 20 / 1.6 | 20 / 1.6 |
| Max. load per shelf (kg / lbs) | | 25 / 55.1 | 25 / 55.1 | 25 / 55.1 |
| Permitted total load (kg / lbs) | | 65 / 143.3 | 65 / 143.3 | 65 / 143.3 |
| Dimension (WxDxH) | Interior (mm / inch) | 348×220×353 / 13.7×8.7×13.9 | 398×330×498 / 15.7×13×19.6 | 498×390×538 / 19.6×15.4×21.2 |
| | External (mm / inch) | 611×878×911 / 24.1×34.6×36.2 | 660×1048×1056 / 23.7×41.2×41.6 | 761×1108×1096 / 30.0×43.6×43.1 |
| | Viewing window (mm / inch) | 220×300 / 8.7×11.8 | | |
| | Net weight (kg / lbs) | 80±5 / 176±11 | 110±5 / 242±11 | 130±5 / 286±11 |
| Cable port ²⁾ | | Basically one hole provided / ø 50mm (2") Optionally max. two holes available / ø 50 or 80mm (2 or 3.2") | | |
| Interface port | | Basically RS-232C [RS-485 optional] | | |
| Electrical requirements (230V, 1hp, 60Hz) | | 9.6A | 12A | 14.4A |
| Cat. No. | | AAH82211K | AAH82221K | AAH82231K |
| Electrical requirements (230V, 1hp, 50Hz) | | 9.6A | 12A | 14.4A |
| Cat. No. | | AAH82212K | AAH82222K | AAH82232K |

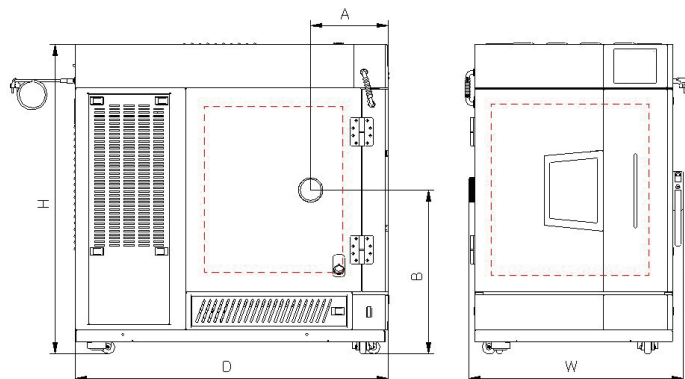
1) Technical data according to DIN 12880, IEC 60068.

2) 80mm cable access hole is NOT available for 25L chamber.

※ Permissible environmental conditions: temperature (18 to 30°C) and relative humidity (up to 85%).

※ All specifications are under ambient temperature 20°C (68°F), No load.

※ FDA establishment registered company. FDA listed products.



Dimension

| Model | TH-PE-25 | TH-PE-65 | TH-PE-100 |
|-----------------|----------------|----------------|------------------|
| Capacity | 25L(0.9 cu ft) | 65L(2.3 cu ft) | 100L(3.53 cu ft) |
| W | 611mm(24.1") | 660mm(26.0") | 761mm(30.0") |
| D | 878mm(34.6") | 1048mm(41.3") | 1108mm(43.6") |
| H | 911mm(36.2") | 1056mm(41.6") | 1096mm(43.1") |
| A | 211mm(8.3") | 276mm(10.9") | 276mm(10.9") |
| B | 495mm(19.5") | 580mm(22.8") | 580mm(22.8") |

Pharmaceutical Stability Test Chambers (TH-ICH)



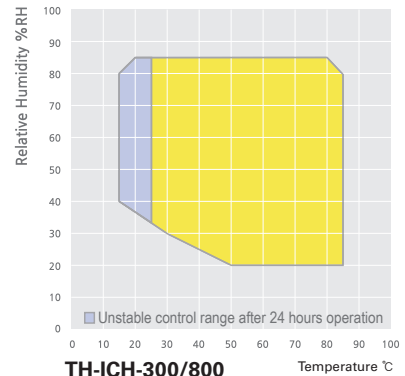
Manufactured in accordance with ICH Guidelines
Q1A-Stability test (R2), Q1B-Photostability test (Option 2).

- ▶ Optimum temperature and humidity control system for long-term stability test.
- ▶ Independent luminescence control system for photostability test.



Control range

- Temperature range from -5 to 85°C
- Humidity range from 20 to 85% RH



TH-ICH

with the optional recorder

Standard accessories • Wire shelves, Cable port (Ø50mm)

Optional accessories • Direct water system
see page 242 • Fluorescent lamp (cool white), UVA lamp,
UV sensor, Illumination sensor, Door key

Performance

- Microprocessor PID control / Temperature calibration / Automatic tuning.
- Rapid humidity control is achieved by adapting the humidification tank interior to the chamber.
- Air-tight door closure with perfect sealed packing.
 - Heat-resistant silicone packing completely blocks high heat leakage from the inner chamber.

Convenience

- Two different sized models available to suit any users' needs.
- Corrosion resistant stainless steel chamber.
- Cable port for introduction of external probes or wires.
 - 50mm diameter cable port comes standard on the left side of the unit.
 - Additional 50mm or 80mm diameter cable ports, custom ordered. (optional)
- Inner glass door with entry ports for handling samples without affecting inner chamber temperature and humidity. (optional)
- Casters for easy mobility during installation or relocation.
- User friendly LCD controller.
 - Colorful interactive touch type LCD controller.
 - Set point temperature and present temperature are clearly shown together on display.
 - Sufficient programmable control support.
 - Operating progress can be shown in graph mode for better data understanding.
 - Automatic start/stop can be programmed for unattended operations.
 - Display indicates abnormal temperature changes or power failures.
 - Selective bilingual language support.
(Korean / English or English / Chinese, selectable only when placing an order)
 - Temperature and other operating parameters can be recorded using a six channel digital recorder. (optional)
- Computer interface.
 - RS-485 communication port (optional) enables connection up to maximum 32 units. Simultaneous monitoring and operating of multiple units is an available feature.
 - Program patterns are simple to set with the use of our software.
 - Easy to check status of real-time operations. Graph data supports easy understanding.
 - Storage and documentation of programs.
 - Data with saving capabilities in excel and text format.
 - Storage of program information, backup of value settings, recovery, and temperature values.
 - RS-232 communication port as standard offer.

| Description | No |
|---|---------------------|
| Programmable pattern capacity | 100 |
| Pattern repeat time | 999 |
| Part repeat time | 255 |
| Max. segments per a pattern | 100 |
| Available max. segments* | 2000 |
| Programmable process time per a segment | 0 to 99 hr. 59 min. |

* Even though the max. segments per pattern are 100, the total available segments are up to 2000 not 10000, therefore arrangement of the number of segment and patterns will need to be done properly.

Stability test ICH guideline Q1A (R2)

- Operating progress visible through graph mode for better data analyzation.
- Cyclic defrost system, designed to work excellently for the long period stability test operation.
 - (※ Temperature and humidity changes may occur during automatic defrost.)
- Maintenance of water supply are easily performed with a front water tank.
 - Water level check indicated by water level bar in the tank.
- Water supply during operation is also available for long term test purposes.
- Direct water system provides user great convenience when performing long-term test. (optional)

Photostability test ICH guideline Q1B (Option 2)

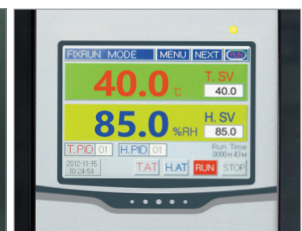
- Built in UV and fluorescent lamps for uniformed luminescence.
- Equipped with movable UV and VIS sensors .
- Independent lamp controller
 - An indicator for Total usage time of UV and fluorescent lamps.
- Convenient set function of cumulative dosage and lamp Off.

Safety

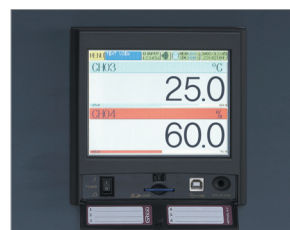
- Built in door lock with a key.
- Automatic shut off after overheat alarm.
- Low and empty water level alarm.
- Power supply leakage breaker.
- Over current protection.
- Open door alarm.



Lamp controller



LCD controller



Digital recorder (optional)



Water level indicator

Pharmaceutical Stability Test Chambers (TH-ICH)

| Model | | TH-ICH-300 | TH-ICH-800 |
|--|---|--|--|
| Chamber volume (L / cu ft) | | 300 / 10.6 | 760 / 26.8 |
| Controller | | PID control (LCD Type) | |
| Temperature | Range | without humidity (°C / °F) | -5 to 85 / 23 to 185 without Light 0 to 85 / 32 to 185 with Light |
| | | with humidity (°C / °F) | +15 to 85 / 59 to 185 with Light |
| | Fluctuation ¹⁾ (±°C / °F) at 40°C / 60%RH | 0.3 / 0.55 | 0.3 / 0.55 |
| | Variation ¹⁾ (±°C / °F) at 40°C / 60%RH | 0.5 / 0.9 | 0.7 / 1.3 |
| Time | Heating | 25min (20°C → 85°C) | 30min (20°C → 85°C) |
| | Cooling | 35min (20°C → 5°C) | 40min (20°C → 5°C) |
| Humidity | Range (%RH) | 20 to 85 ※ See page 236 for more detailed humidity range check. | |
| | Fluctuation ¹⁾ (±%RH) at 60%RH / 40°C | 3 | |
| | Variation ¹⁾ (±%RH) at 60%RH / 40°C | 5 | |
| Light source (ICH Q1B option 2) | Cool white ²⁾ | 6,000 lux | 6,500 lux |
| | Ultraviolet-A ²⁾ | 4.5 W/m ² | 5 W/m ² |
| | Light uniformity | VIS. : ±10% UVA : ±15% | VIS. : ±15% UVA : ±15% |
| Typical time required to reach ICH Recommendation of 1.2 million lux-hr | | ≈ 200Hr | ≈ 184Hr |
| Typical time required to reach ICH recommendation of 200 W-hr/m ² | | ≈ 50Hr | ≈ 40Hr |
| Refrigeration | System | Air-cooled | |
| | Refrigerant | R-404A | |
| Water tank | Capacity (L / cu ft) | 15 / 0.53 | |
| | Water quality | pH6.2 ~ 7.2, Electrical conductivity 20µs / cm to below | |
| No. of wire shelves (standard / max.) | | 2 / 8 | 2 / 17 |
| Distance of between shelves (mm / inch) | | 60 / 2.4 | 60 / 2.4 |
| Max. load per shelf (kg / lbs) | | 25 / 55.1 | 40 / 88.2 |
| Permitted total load (kg / lbs) | | 75 / 165.3 | 100 / 220.5 |
| Dimension (WxDxH) | Interior (mm / inch) | 750×650×650 / 29.5×25.6×25.6 | 750×880×1160 / 29.5×34.6×45.7 |
| | Exterior (mm / inch) | 1130×985×1520 / 44.5×38.8×59.8 | 1220×1215×1965 / 48×47.8×77.4 |
| | Net weight (kg / lbs) | 280±10 / 617±22 | 400±10 / 882±22 |
| Cable port | | Basically one hole provided / ø 50mm (2"), Optionally max. two holes available / ø 50 or 80mm (2 or 3.2") | |
| Interface port | | Basically RS-232C, [RS-485 : optional] | |
| Electrical requirements | AC230V, 1ph, 60Hz | 15.4 A | 24.5 A |
| | Cat.No. | AAHC1001K | AAHC1011K |
| | AC230V, 1ph, 50Hz | 15.4 A | 24.5 A |
| | Cat.No. | AAHC1002K | AAHC1012K |

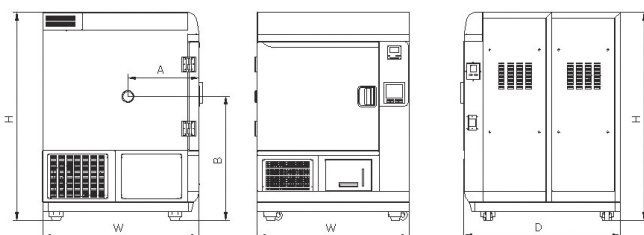
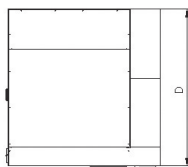
1) Technical data according to DIN 12880, IEC 60068.

2) The value is measured on the center of chamber at the point of vertical direction.

※ Permissible environmental conditions: temperature (18 to 30°C) and relative humidity (up to 85%).

※ All specifications are under ambient temperature 20°C (68°F), No load.

※ FDA establishment registered company. FDA listed products.



Dimension

| Model | TH-ICH-300 | TH-ICH-800 |
|----------|-------------------|-------------------|
| Capacity | 300L (10.6 cu ft) | 760L (26.8 cu ft) |
| W | 1130mm (44.5") | 1220mm (48") |
| D | 985mm (38.8") | 1215mm (47.8") |
| H | 1520mm (59.8") | 1965mm (77.4") |
| A | 460mm (18.1") | 545mm (21.5") |
| B | 905mm (35.6") | 1185mm (46.7") |

Clean Temp. & Humid. Chamber (TH-CR)



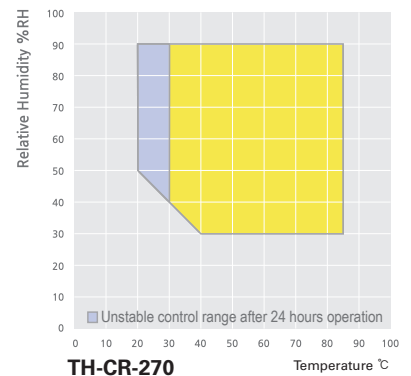
Specially designed for processes requiring clean and controlled environmental test conditions. (ISO class 5 air cleanliness as per ISO 14644-1)

- ▶ Heat-resisting HEPA filter provides clean environment.
 - 0.3 μm and larger particulates are removed with 99.99% efficiency
- ▶ ULPA filter provides for better air cleanliness of the chamber. (optional)
 - 0.1 μm and larger particulates are removed with 99.999% efficiency
- ▶ No external exhaust system required.



Control range

- Temperature range from -35 to 100°C
- Humidity range from 30 to 90% RH



TH-CR

with optional recorder

Standard accessories

- Viewing window, Wire shelves, Cable port ($\varnothing 50\text{mm}$), HEPA filter, Water container

Optional accessories

see page 242

- ULPA filter, Water purifier, Direct water system

Clean Temp. & Humid. Chamber (TH-CR)

Performance

- Microprocessor PID control / Temperature calibration / Automatic tuning.
- Exhaust duct is located at the upper right side of the unit to avoid influence other devices.
- Built-in differential pressure gauge for easy observation of HEPA filter condition.

Convenience

- Silicone-free construction for clean environment.
- Corrosion resistance stainless steel chamber.
- Maintenance of water supply are easily performed with a front water tank.
 - Water level check indicated by water level bar in the tank.
- Water supply during operation is also available for long term test purposes.
- Direct water system provides user great convenience when performing long-term tests. (optional)
- Clear observation of samples.
 - Tempered glass window with wire heater and lighting provides a clear view of samples in the chamber, beneficial for during testing.
 - Inner glass door with entry ports for handling samples without affecting inner chamber temperature and humidity. (optional)
- Cable port for introduction of external probes or wires.
 - 50mm diameter cable port comes standard on the left side of the unit.
 - Additional 50mm or 80mm diameter cable ports, custom ordered. (optional)
- Casters for easy mobility during installation or relocation.
- User friendly LCD controller.
 - 5.7 inch colorful interactive touch type LCD controller.
 - Set value and present value are clearly visible together on display.
 - Operating progress visible in graph mode allow for direct data interpretation.
 - Temperature and other operating parameters recorded with use of selectable recorder. (optional)
 - Sufficient programmable control support.
 - Programming operation.

| Description | No |
|---|---------------------|
| Programmable pattern capacity | 120 |
| pattern repeat time | 999 |
| Max. Segments per a pattern | 100 |
| Available max. segments* | 1200 |
| Programmable process time per a segment | 0 to 99 hr. 59 min. |

* Even though the max. segments per a pattern are 100, available total segments are up to 1200 not 12000, so you need to arrange the number of segment and patterns properly.

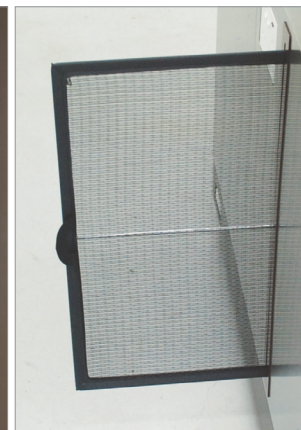
- Computer interface.
 - RS-485 communication port enables connection of up to maximum 9 units. Simultaneous monitoring and operating of multiple units is an available feature. (optional)
 - Program patterns are simple to set with the use of our software.
 - Storage of program information, backup of value settings, recovery, temperature, humidity values.
 - RS-232 communication port comes standard.

Safety Features

- Automatic shut off after overheat alarm.
- Low and empty water level alarm.
- Power supply leakage breaker.
- Over current protection.
- Open door alarm.



Control panel



Air-filter



Viewing window



Water level indicator

Accessories & Options

for Tabletop Chambers & Floor Standing Chambers

Accessory check list

□ Standard ○ Optional

| Description | Models | | | | | | | | | |
|--|--------|------|-------|-------|-------|-------|-------|-------|--------|-------|
| | TH-G | TH-I | TH-KH | TH-TG | TH-DG | TH-KE | TH-ME | TH-PE | TH-ICH | TH-CR |
| Recorder (6 points) | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Recorder (digital, 6 channels) | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Interface converter (RS-485C → 232C included a cable, 5m / 16.4ft) | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Interface cable (5m / 16.4ft) | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Warning signal lamp | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Inner glass door | ○ | ○ | ○ | ○ | ○ | - | - | - | ○ | - |
| Viewing window | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ |
| Wire shelf | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ |
| Perforated shelf | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Cable port (Ø 50mm / 2") | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ |
| Cable port (Ø 80mm / 3.2") ¹⁾ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Temperature sensor (RTD type) | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ |
| Humidity sensor | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ |
| Fluorescent lamp (Cool White) | - | - | - | - | - | - | - | - | □ | - |
| UVA lamp | - | - | - | - | - | - | - | - | □ | - |
| UV sensor | - | - | - | - | - | - | - | - | □ | - |
| Illumination Sensor | - | - | - | - | - | - | - | - | □ | - |
| HEPA filter | - | - | - | - | - | - | - | - | - | □ |
| ULPA filter | - | - | - | - | - | - | - | - | - | ○ |
| Water cartridge tank (Water Container) | □ | □ | □ | □ | - | - | - | - | - | □ |
| Water purifier | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Direct water system | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Stand | - | - | - | - | - | ○ | ○ | ○ | - | - |
| Two step stand | - | - | - | - | - | ○ | ○ | ○ | - | - |

1) 80mm cable access hole is NOT available for 25L chamber.

Ordering information

| Cat. No. | Description | Suitable for | |
|----------|--|--|------------|
| AAA8T504 | Recorder (6 points) | Tabletop models | |
| AAA8T500 | | Floor standing models | |
| AAA8T506 | | Tabletop models | |
| AAA8T505 | | Floor standing models | |
| AAA8T540 | Interface converter (RS-485C → 232C included a cable, 5m / 16.4ft) | All models | |
| AAA8T542 | Interface cable (5m / 16.4ft) | All models | |
| AAA80550 | Warning signal lamp | All models | |
| AAA81552 | Inner glass door | TH-G//KH-180 | |
| AAA81551 | | TH-G//KH-300, 408, CR-270 | |
| AAA81550 | | TH-G-800, 1000 | |
| AAAC2501 | | TH-TG-180 | |
| AAAC2502 | | TH-TG-300, 408 | |
| AAAC2503 | | TH-TG-800, 1000 | |
| AAAC6511 | | TH-DG-150 | |
| AAAC6512 | | TH-DG-300 | |
| AAAC6513 | | TH-DG-400 | |
| AAA81554 | | TH-ICH-300 | |
| AAA81555 | | TH-ICH-800 | |
| AAA8T610 | | Cable port (Ø 50mm / 2") | All models |
| AAA8T611 | | Cable port (Ø 80mm / 3.2") | All models |
| CFA1185 | Temperature sensor (RTD type) | TH-G//DG TH-TG//ICH//CR, TH-KE//ME//PE | |
| CFA7113 | Humidity sensor | All models | |
| RTD1190 | Fluorescent lamp (cool white) | TH-ICH-300 | |
| RTD1191 | | TH-ICH-800 | |
| RTD1188 | | TH-ICH-300 | |
| RTD1189 | UVA lamp | TH-ICH-800 | |
| AAA80680 | THE-680 UV sensor | TH-ICH-300/800 | |
| AAA80681 | THE-681 Illumination sensor | TH-ICH-300/800 | |
| AAA80661 | Door lock device | TH-ICH-300/800 | |
| EDA9184 | HEPA filter | TH-CR-270 | |
| EDA9175 | ULPA filter | TH-CR-270 | |
| AAA80622 | Water cartridge tank | All models | |
| AAA8T621 | Water purifier | All models | |
| AAA80620 | Direct water system | All models | |
| AAA80631 | Stand | TH-KE//ME//PE-025 | |
| AAA80632 | | TH-KE//ME//PE-065 | |
| AAA80633 | | TH-KE//ME//PE-100 | |
| AAA80634 | | TH-KE//ME//PE-025 | |
| AAA80635 | Two step stand | TH-KE//ME//PE-065 | |

| Cat. No. | Description | Suitable for |
|-------------|------------------|-------------------|
| RTD679 | Wire shelf | TH-KE//ME//PE-025 |
| RTD680 | | TH-KE//ME//PE-065 |
| RTD681 | | TH-KE//ME//PE-100 |
| EDA8212 | | TH-G//KH-180 |
| EDA8213 | | TH-G//KH-300 |
| EDA8214 | | TH-G//KH-408 |
| EDA8215 | | TH-G-800 |
| EDA8216 | | TH-G-1000 |
| RTD1302 | | TH-TG-180 |
| RTD1303 | | TH-TG-300 |
| RTD1300 | | TH-TG-408 |
| RTD1304 | | TH-TG-800 |
| RTD1301 | | TH-TG-1000 |
| RTD1305 | | TH-G//TG-1500 |
| EDA8251 | | TH-DG-150 |
| RTD1280 | | TH-DG-300 |
| EDA8250 | | TH-DG-400 |
| RTD1196 | | TH-ICH-300 |
| RTD1198 | | TH-ICH-800 |
| STT1040 | TH-CR-270 | |
| AAA80602-6 | Perforated shelf | TH-KE//ME//PE-025 |
| AAA80602-7 | | TH-KE//ME//PE-065 |
| AAA80602-8 | | TH-KE//ME//PE-100 |
| AAA80602-1 | | TH-G//KH-180 |
| AAA80602-2 | | TH-G//KH-300 |
| AAA80602-3 | | TH-G//KH-408 |
| AAA80602-4 | | TH-G-800 |
| AAA80602-5 | | TH-G-1000 |
| AAA80604-11 | | TH-TG-180 |
| AAA80604-12 | | TH-TG-300 |
| AAA80604-13 | | TH-TG-408 |
| AAA80604-14 | | TH-TG-800 |
| AAA80604-15 | | TH-TG-1000 |
| AAA80604-16 | | TH-G//TG-1500 |
| AAAC6501 | | TH-DG-150 |
| AAAC6502 | | TH-DG-300 |
| AAAC6503 | | TH-DG-400 |
| AAA80604-2 | | TH-ICH-300 |
| AAA80604-4 | | TH-ICH-800 |
| AAA80603-1 | | TH-CR-270 |



Optimal photosynthesis condition guaranteed when using our plant growth chamber.

Ample capacity, maximum capacity of 1000L to satisfy user's plant growth needs



GC-1000TLH / GC-300TLH

with optional recorder

- | | |
|-----------------------------|---|
| Standard accessories | • Inner glass door, Wire shelves |
| Optional accessories | • Perforated shelves, CO ₂ sensors |
- see page 245

Optimal photosynthesis condition for plant growth.

- ▶ Uniform temperature and humidity. (TLH models)
- ▶ Reinforced Blue and Red spectrums lighting system for plant photosynthesis.
- ▶ Optional CO₂ sensor (optional)
- ▶ Programmable temperature, humidity, and lighting.
- ▶ Progressive temperature, humidity, illumination program control for optimization of plant growth environment for night and day.

Plant Growth Chambers (GC)

Performance

General control system

- 5°C to 50°C (lamp off) / 10°C to 50°C. (lamp on)
- Max. to 35,000Lux for GC-1000.
Max. to 20,000Lux for GC-300 Models.
- 40 to 80% RH for GC-300TLH. (at 20 to 35°C)
50 to 90% RH for GC-1000TLH. (at 20 to 35°C)
- Max. 5,000ppm CO₂ on/off system. (optional)
- Microprocessor PID control / Temperature calibration / Automatic tuning
- 10 step programmable temperature, humidity, and illumination profiles and repeatable steps of up to 999 cycles.
- Advanced performance of low and high temperature and humidity control, achieved by adapting the humidification tank exterior to the chamber, added benefit for long term test.

Illuminance control system

- Uniformed luminescence distribution.
- Broad distribution of side lamps for hastening the growth of plants.
- High intensity illumination of upper lamp for light efficient and low thermal load. (for GC-1000TLH/1000TL)
- Unique construction for minimization of heat increase from surrounding lamps.
 - Tempered glass door blocks heated air from lamps.
 - Designed to exhaust heated air through upper vent holes. (for GC-1000TLH)
- Stable and long lasting lighting through introduction of high frequency electronic ballast lamps.

Convenience

- Ergonomically designed door construction.
 - Inner glass door with silicone and external door with magnetic sealing for dual airtight packing.
 - Well designed providing a smooth open for minimization of damage to plants.
- Wide inner tempered glass door for clear observation of plant growth without affecting inner chamber's environment.
- Tall plants can be grown inside of the chamber with adjustment of shelf level.
- Maintenance of water supply are easily performed with a front water tank. (GC-1000TLH)
 - Water level check indicated by water level bar in the tank.
- Water supply during operation is also available for long term test purposes.
- Adjustable water tank position. (for GC-300TLH)
- Detachable condenser air-filter for easy maintenance of refrigerating efficiency.
 - Maintenance of air filter no longer cumbersome with our detachable condenser air filter.

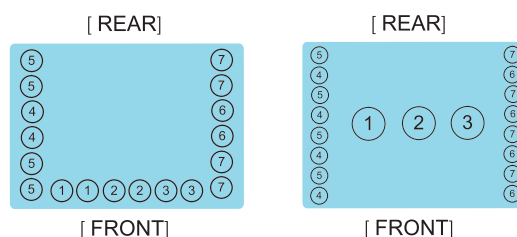
- Casters for easy mobility during installation or relocation.
- Eco-friendly CFC-free refrigerant use.

Safety

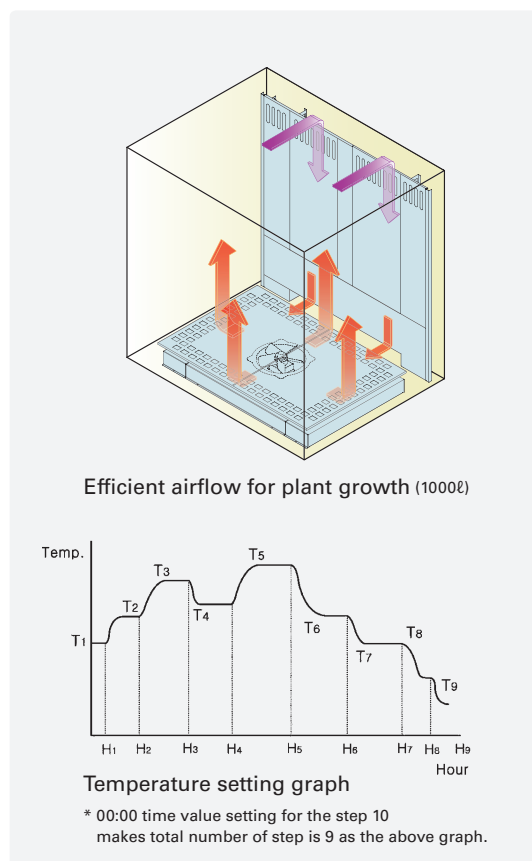
- Automatic shut off after overheat alarm.
- Low and empty water level alarm.
- Power supply leakage breaker.
- Over current protection,
- Open door alarm.

Lamps setting

- Control illumination values with the below lamp setting arrangements.



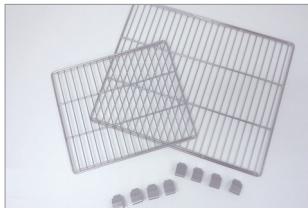
GC-300 lamp arrangement GC-1000 lamp arrangement



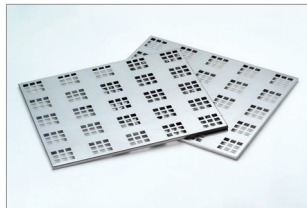
| Model | | GC-300TL | | GC-300TLH | | GC-1000TLH | |
|--------------------------------|--------------------------------|--------------------------------------|--|-----------------------------|--|---|------------------|
| Chamber volume (L / cu ft) | | 300 / 10.6 | | | | 1000 / 35.3 | |
| Control system | | Microprocessor PID controller | | | | | |
| Temperature | Range (°C / °F) | 5 to 50 / 41 to 122 - Lamp off | | | | | |
| | | 10 to 50 / 50 to 122 - Lamp on | | | | | |
| | | 20 to 50 / 68 to 122 - with humidity | | | | | |
| | Fluctuation (±°C / °F) at 25°C | 0.4 / 0.72 - without humidity | | | | | |
| Variation (±°C / °F) at 25°C | 1.0 / 1.8 - without humidity | | | | | | |
| Illumination | Range (Lux) | 0 to 20,000 | | | | 0 to 35,000 | |
| | Control (steps) | 10 | | | | 11 | |
| | Lamp | Fl lamp (32W×18ea) | | | | FL lamp (32W×16ea) Metal lamp (400W×3ea) | |
| Humidity | Range (% RH) | - | 40 to 80 at 20 to 35°C 70 to 90 at 36 to 50°C | | 50 to 90 at 20 to 35°C 60 to 90 at 36 to 50°C | | |
| | Fluctuation (±RH) at 60% RH | - | 3 | | | | |
| CO ₂ (optional) | Range (ppm) | Max. 5,000 | | | | | |
| | Sensor | NDIR CO ₂ sensor | | | | | |
| Refrigerant (HP) | | 1/2 | | | | 3/4 | |
| Temp. heater power (W) | | 750×2ea | | | | 1,500×2ea | |
| Humid. heater power (W) | | - | | | | 1800 | |
| Dimension (W×D×H) | Interior (mm / inch) | 510×540×1100 / 20×21.3×43.3 | | | | 1200×800×1080 / 47.2×31.5×42.5 | |
| | Exterior (mm / inch) | 700×760×1930 / 27.6×29.9×76 | | 700×920×1930 / 27.6×36.2×76 | | 1410×1068×2160 / 55.5×42×85 | |
| | Net weight (kg / lbs) | 250 / 551.2 | | | | 550 / 1212.5 | |
| Electrical requirements (230V) | | 60Hz / 15A | 50Hz / 15A | 60Hz / 15A | 50Hz / 15A | 60Hz / 17A | 50Hz / 17A |
| Cat. No. | | AAHA1011K | AAHA1012K | AAHA1021K | AAHA1022K | AAHA1031K | AAHA1032K |

※ FDA establishment registered company. FDA listed products.

Accessories & Options



Wire shelves



Perforated shelves



Recorder (dot type)



CO₂ sensor

| Model | Wire shelves | | | Perforated shelves | | |
|------------|-----------------|----------------------------|--------------------------------|--------------------|----------------------------|-----------------------|
| | Cat. No. | Dimension (W×L, mm / inch) | No. of shelves (standard/max.) | Cat. No. | Dimension (W×L, mm / inch) | No. of shelves (max.) |
| GC-300TL | EDA8220 | 466×490 / 18.3×19.3 | 3 / 14 | AAA22522 | 466×490 / 18.3×19.3 | 14 |
| GC-300TLH | EDA8220 | | 3 / 14 | AAA22522 | | 14 |
| GC-1000TLH | EDA8222 | 580×770 / 2.8×30.3 | 6 / 29 | AAAA1512 | 580×770 / 22.8×30.3 | 29 |
| Model | Recorder | | CO ₂ sensor | | | |
| | Cat. No. | | Cat. No. | | | |
| GC-300TL | AAAA1501 | | AAAA1521 | | | |
| GC-300TLH | AAAA1501 | | AAAA1521 | | | |
| GC-1000TLH | AAAA1502 | | AAAA1521 | | | |