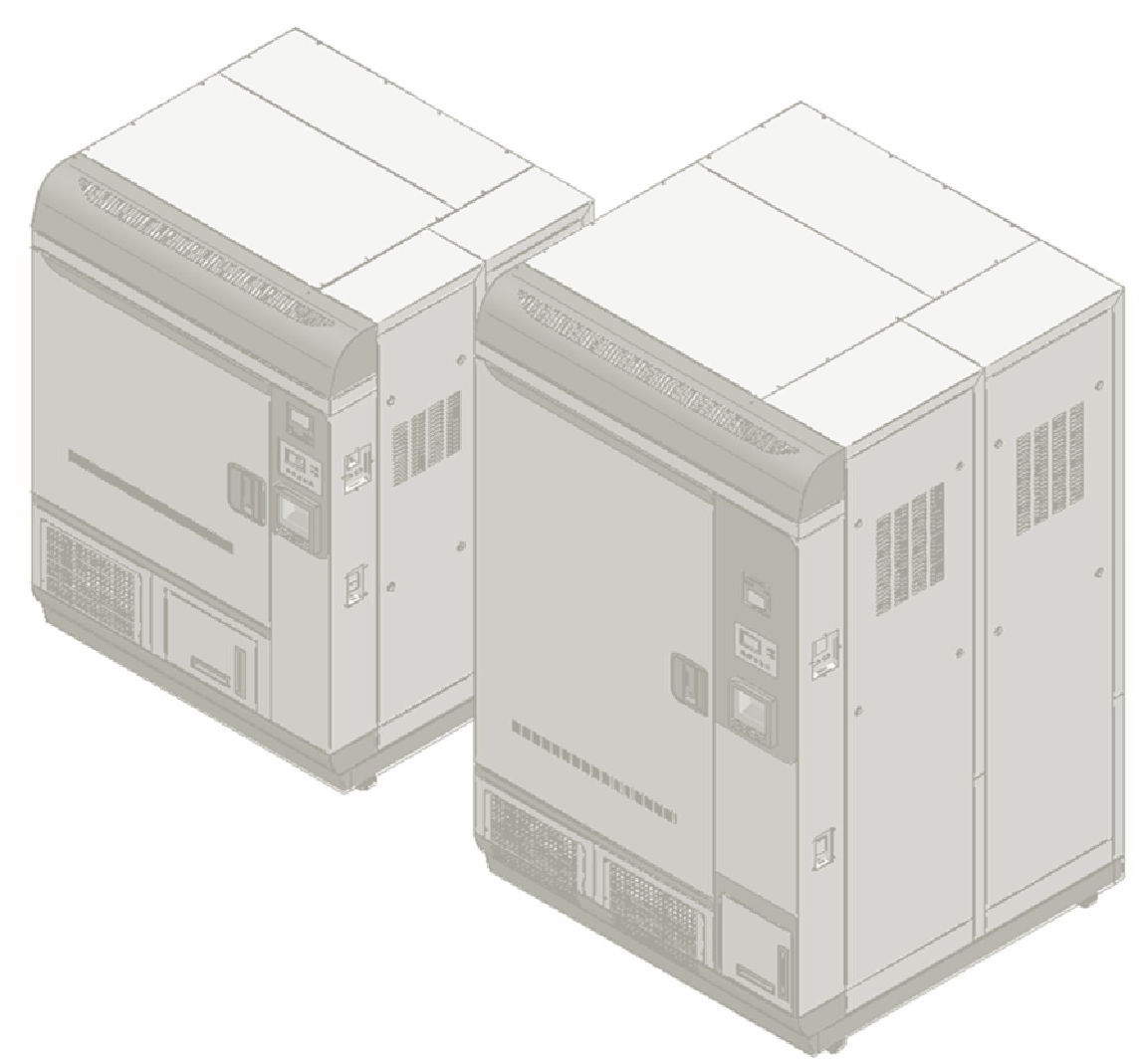


OPERATION MAUNAL

TEMPERATURE & HUMIDITY CHAMBER WITH ILUMINATION

TH-ICH-300/800

MANUAL NO.: Manual No. 00HAA0001227 VER.(0.0)

JEIO TECH

⚠WARNING

Before using this product, read this entire Operator's Manual carefully. Users should follow all of the Operational Guidelines contained in this Manual and take all necessary safety precautions while using this product. Failure to follow these guidelines could result in potentially irreparable bodily harm and/or property damage.

Thank you for purchasing Jeio Tech's products.

Jeio Tech Co., Ltd. is committed to customer service both during and after the sale. If you have questions concerning the operation of your unit or the information in this manual, contact our Sales Department. If your unit fails to operate properly, or if you have questions concerning spare parts or Service Contracts, contact our Service Department.

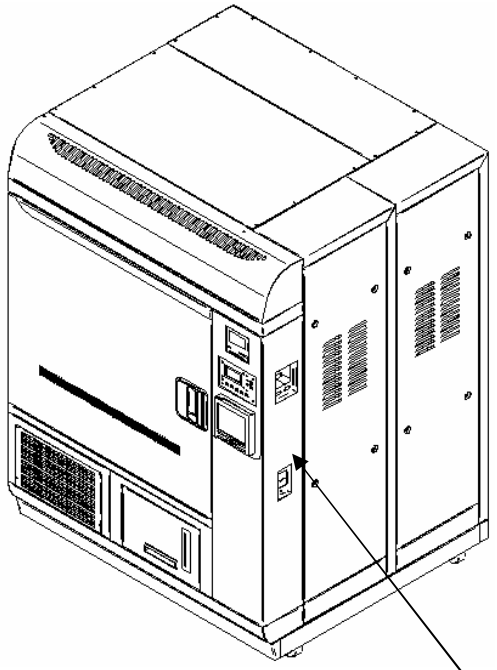
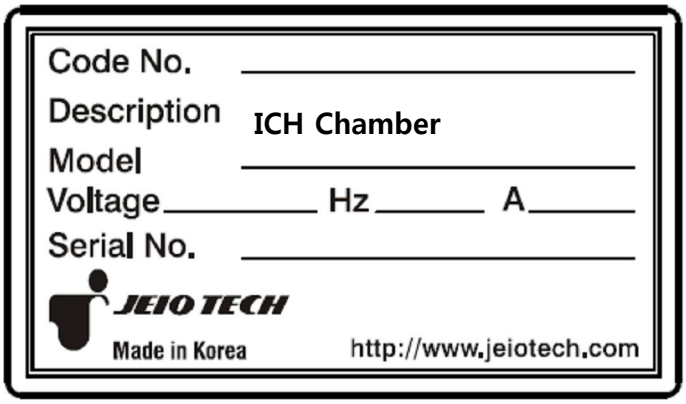


Figure A.



Please locate the identification label on the right side of the instrument. Fill in the information found on the identification label in the spaces provided above in Figure A. Refer to this identification label information when calling, if your unit fails to operate properly, or if you have questions concerning spare parts or service contracts. Additionally, use this information at **www.jeiotech.com** when you register your TEMPERATURE & HUMIDITY CHAMBER (TH-ICH MODEL) when you fill out the enclosed registration card.

Quality Management System

Jeio Tech Co, Ltd. is dedicated to providing world-best product quality and customer satisfaction. To ensure we maintain this commitment we have developed and implemented a total quality program, which conforms to the requirements according to DIN EN ISO 9001:2000 for the design, development, production, sales and servicing of biotechnology, environmental chemical engineering related products, and reliable measuring equipment for electric and electronics (ovens, incubators, constant temperature humidity chambers, constant temperature baths, refrigerating bath circulators, heat exchangers and shakers).

Visit our Web site at www.jeiotech.com/eng/images/ISO-Jeiotech-1.jpg to view a copy of our certificate.

Disclaimer

Jeio Tech Co., Ltd. is committed to a continuing program of product development and improvement, and reserves the right to change information, such as specifications, appearance, and dimensions, described in this document without notice.

Copyright

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Table of Contents

1.0 Safety

1.1 How to use the Manual

1.1.1 Introduction

This manual is intended for individuals requiring information about the use Temperature and Humidity ICH chamber. Use this manual as a guide and reference for installing, operating, and maintaining your Jeio Tech Temperature and Humidity ICH chamber. The purpose is to assist you in applying efficient, proven techniques that enhance equipment productivity

This manual covers only light corrective maintenance. No installation, service procedure or other maintenance should be undertaken without first contacting a service technician, nor should be carried out by someone other than a service technician with specific experience with laboratory equipment and electricity.

1.1.2 Chapter summary

The Functional Description chapter outlines models covered, standard features, and safety features. Additional sections within the manual provide instructions for installation, pre-operational procedures, operation, preventive maintenance, and corrective maintenance.

The Installation chapter includes required data for receiving, unpacking, inspecting, and setup of the unit. We can also provide the assistance of a factory-trained technician to help train your operator(s) for a nominal charge. This section includes instructions, checks, and adjustments that should be followed before commencing with operation of the Temperature and Humidity ICH chamber. These instructions are intended to supplement standard laboratory procedures performed at daily and weekly intervals.
The Operation chapter includes a description of controller features along with temperature and agitation parameter setting instructions, multi-segment program setting instructions and instructions for changing the type of agitation and agitation amplitude.
The Accessories and Option chapter is your source for information on available accessories and option with brief information.
The Appendix contains technical specifications, warranty and Jeio Tech technical support contact information.

1.1.3 Model number nomenclature

This manual covers all five models of the Temperature and Humidity ICH series. The following describes the model number nomenclature used in throughout the manual.

→ TH-ICH-300 chamber capacity (300L)
→ TH-ICH-800 chamber capacity (760L)

1.2 Safety Notice

Be sure that you are completely familiar with the safe operation of this Temperature and Humidity ICH chamber. This unit may be connected to other machinery, such as a temperature control unit. Improper use can cause serious or fatal injury.

Installation and repair procedures require specialized skills with laboratory equipment and electricity. Any person that installs or repairs this unit must have these specialized skills to ensure that this unit is safe to operate. Contact Jeio Tech or their local authorized distributor for repairs or any questions you may have about the safe installation and operation of this unit.

The precaution statements are general guidelines for the safe use and operation of this instrument. It is not practical to list all unsafe conditions. Therefore, if you use a procedure that is not recommended in this manual you must determine if it is safe for the operator and all personnel in the proximity to the Temperature and Humidity ICH chamber. If there is any question of the safety of a procedure please contact Jeio Tech before starting or stopping the Temperature and Humidity ICH chamber.

This equipment contains high voltages. Electrical shock can cause serious or fatal injury. Only qualified personnel should attempt the startup procedure or troubleshoot this unit.

- Documentation must be available to anyone that operates this equipment at all times.
- Keep non-qualified personnel at a safe distance from this unit.
- Only qualified personnel familiar with the safe installation, operation and maintenance of this unit should attempt start-up or operating procedures.
- Always stop the Temperature and Humidity ICH chamber before making or removing any connections.

1.3 Symbols used in this Manual

The following signal word panels, safety symbols and non safety symbols are used to alert you to potential personal injury hazards or information of importance. Obey all safety messages that follow these symbols to avoid possible personal injury or death.

1.3.1 Signal word panels

Signal word panels are a method for calling attention to a safety messages or property damage messages and designate a degree or level of hazard seriousness. It consists of three elements: a safety alert symbol, a signal word and a contrasting rectangular background. The following signal word panels are in accordance with ANSI Z535.4-2007 and ISO 3864 standards.

⚠ DANGER	Indicates a hazardous situation which, if not avoided, will result in death or serious injury.
⚠ WARNING	Indicates a hazardous situation which, if not avoided, could result in death or serious injury.
⚠ CAUTION	Indicates a hazardous situation which, if not avoided, may result in minor or moderate injury.
NOTICE	Indicates a property damage message.

1.3.2 Safety symbols

Safety symbols are graphic representations—of a hazard, a hazardous situation, a precaution to avoid a hazard, a result of not avoiding a hazard, or any combination of these messages—intended to convey a message without the use of words. The following safety symbols are used in this manual.

Mandatory

Read manual

Wear a face mask

Wear gloves

Wear goggles

Prohibition

No direct sunlight

No high frequency noise

No corrosive fluid or cleaners

No water

WARNING

Safety Alert Symbol. General caution.

Hand crush or pinch

Electrical shock

Foot crush

Flammable or fire could be caused.

Lifting hazard

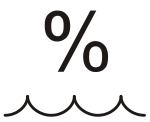
Sharp points

1.3.3 Miscellaneous none safety symbols used in manual

The following graphic representations are intended to convey a message without words or to bring your attention to important information about the use of the Temperature and Humidity chamber or a feature.

European Union electrical directive compliance

Earth ground



Relative humidity

Note

Altitude

1.4 Where to Locate Safety Labels on the Temperature and Humidity ICH chamber.

The safety labels are attached to the Temperature and Humidity ICH chamber important information about potential hazards and how to avoid them. All users must read this operating instruction carefully to operate the product properly.

The following illustrations show where the safety labels should be attached to the Temperature and Humidity ICH chamber until service of the product is discontinued. If the safety labels are damaged, please contact your local Jeio Tech office or distributor to request new labels.

1.4.1 TH-ICH-300

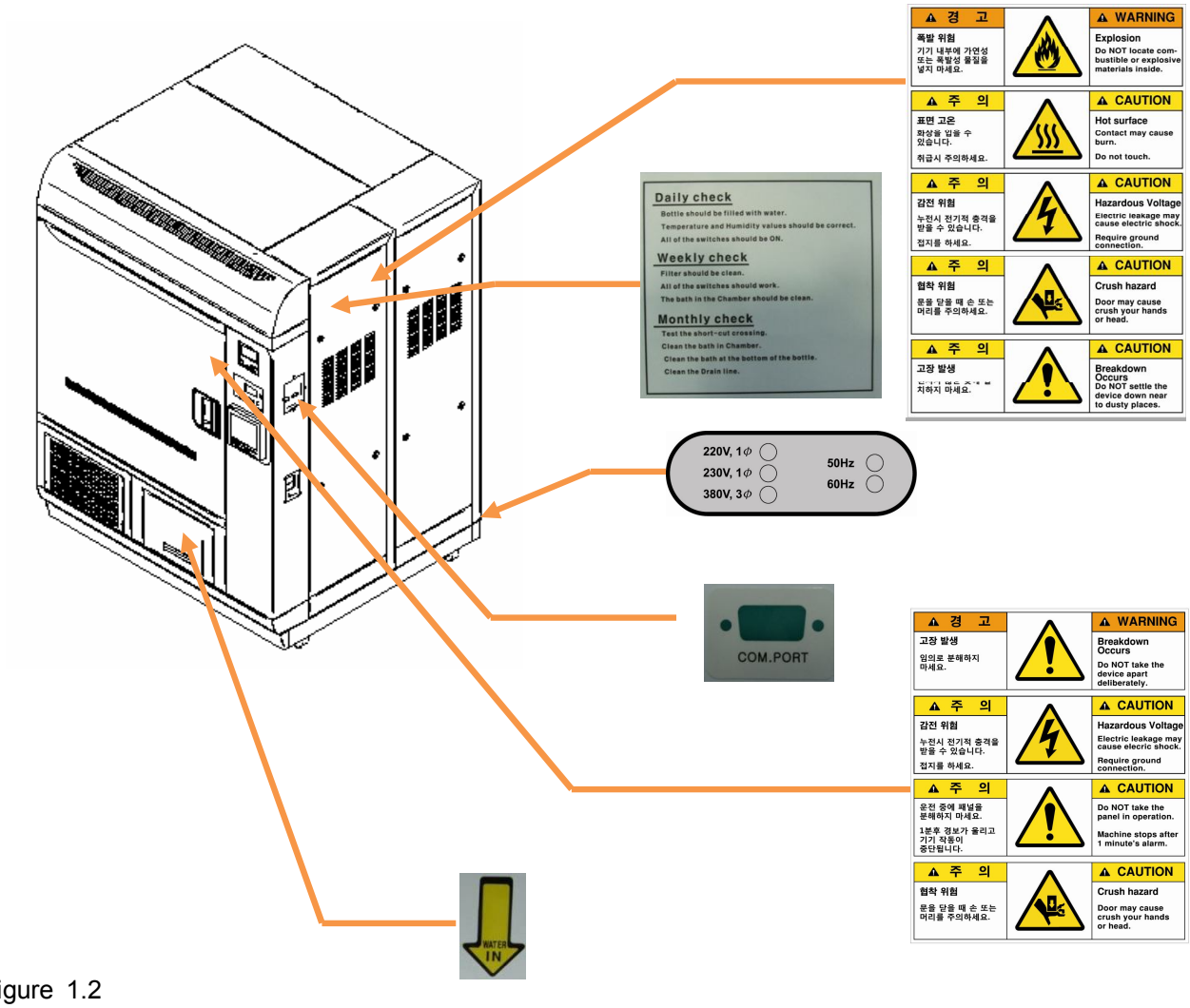


Figure 1.2

1.4.1 TH-ICH-800

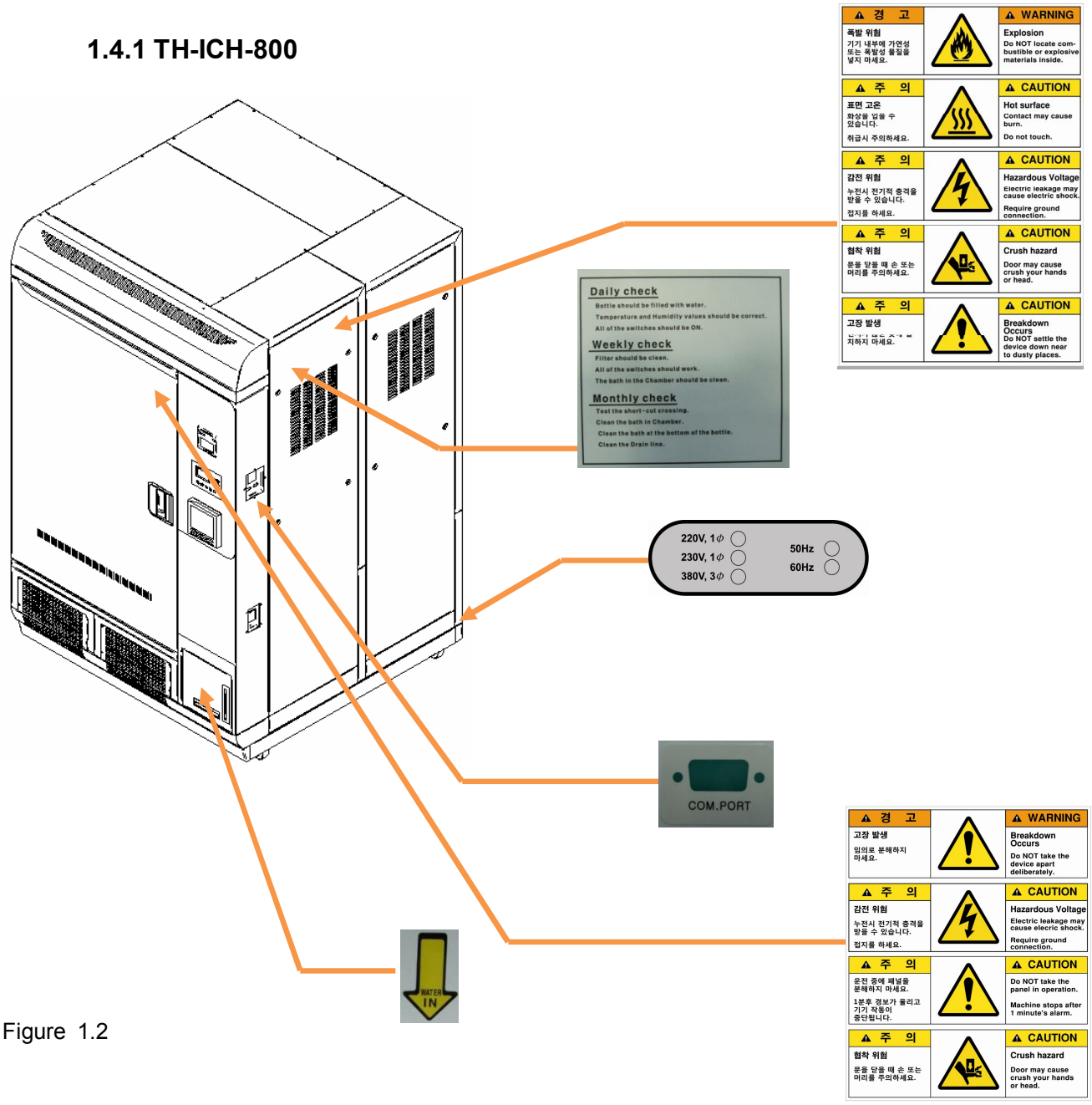


Figure 1.2

1.5 Precautions for Your Temperature and Humidity ICH chamber

Our Temperature and Humidity ICH chamber is designed to provide safe and reliable operation when installed and operated within design specifications. Make sure you read and understand all instructions and safety precautions listed in this manual before installing or operating your unit. If you have any questions concerning the operation of your unit or the information in this manual, contact our Sales Department.

To avoid possible personal injury or equipment damage when installing, operating, or maintaining this Temperature and Humidity chamber, use good judgment and follow these safe practices:

1.5.1 Warning statements

Observe all warning labels.

DO NOT remove warning labels

Check the voltage, phase and capacity of the power supply and connect properly.

DO NOT ground the Temperature and Humidity chamber to gas pipes or water pipes

DO NOT insert multiple plugs into the outlet at the same time

DO NOT operate equipment with damaged line cords

DO NOT handle or touch electrical cord and electrical parts with wet hands

DO NOT move the Temperature and Humidity chamber while it is plugged into the power source

DO NOT use or keep flammable gases near the Temperature and Humidity chamber.

DO NOT install the Temperature and Humidity chamber near environments where flammable gas may leak.

DO NOT use the machine near environments where explosion can occur due to organic evaporating gases

DO NOT put explosive and flammable chemicals (Alcohol, Benzene, and etc) into the chamber.

DO NOT let moisture, organic solvents, dust, and corrosive gas enter the control panel.

DO NOT expose the Temperature and Humidity chamber to direct sunlight.

DO NOT expose the Temperature and Humidity chamber to direct heat sources.

DO NOT use the Temperature and Humidity chamber in places where moisture is high and flooding can occur

DO NOT install the Temperature and Humidity chamber near machinery generating high frequency noise.

DO NOT use Temperature and Humidity chamber in environments that contain industrial oil smoke and metallic dust

DO NOT operate damaged or leaking unit.

DO NOT operate the Temperature and Humidity chamber when there is strange sound, smell and smoke coming from the unit.

DO NOT disassemble, fix or change the Temperature and Humidity chamber other than for those items described in this operating manual..

1.5.2 Caution statements

DO NOT use doors, handles or knobs to lift or stabilize the unit

DO NOT place heavy objects on the power cord.

DO NOT put the Temperature and Humidity chamber on the power cord

DO NOT make the machine wet while cleaning

DO NOT pour water or put liquid on the Temperature and Humidity chamber when cleaning the unit.

DO NOT operate Temperature and Humidity chamber and immediately disconnect the main power supply and request service when water may be in the unit
DO NOT sprinkle insecticide or flammable spray on the Temperature and Humidity chamber

DO NOT clean the Temperature and Humidity chamber with a strong cleanser (e.g., solvent type) and use a soft cloth.

In addition to the safety warnings listed above, safety messages are posted throughout the manual. These safety messages are designated by the use of a signal word panel followed by text and a safety symbol where applicable. Read and follow these important instructions. Failure to observe these instructions can result in permanent damage to the unit, significant property damage, personal injury or death.

1.6 Responsibility

Our Temperature and Humidity chamber are constructed for maximum operator safety when used under standard operating conditions and when recommended instructions are followed in the maintenance and operation of the machine.

All personnel engaged in the use of the Temperature and Humidity chamber should become familiar with its operation as described in this manual.

Proper operation of the unit promotes safety for the operator and all workers in its vicinity.

Each individual must take responsibility for observing the prescribed safety rules as outlined. All caution, warning and danger labels must be observed and obeyed. All actual or potential danger areas must be reported to your immediate supervisor.

1.6.1 General responsibility

No matter who you are safety is important. Owners, operators and maintenance personnel must realize that every day, safety is a vital part of their jobs.
If your main concern is loss of productivity, remember that production is always affected in a negative way following an accident. The following are some of the ways that accidents can affect your production:

Loss of a skilled operator (temporarily or permanently)

Breakdown of shop morale

Costly damage to equipment and laboratory samples

Downtime

An effective safety program is responsible and economically sound.

Organize a safety committee or group, and hold regular meetings. Promote this group from the management level. Through this group, the safety program can be continually reviewed, maintained, and improved. Keep minutes or a record of the meetings.

Hold daily equipment inspections in addition to regular maintenance checks. You will keep your equipment safe for production and exhibit your commitment to safety.

Please read and use this manual as a guide to equipment safety. This manual contains safety warnings throughout, specific to each function and point of operation.

1.6.2 Operator responsibility

The operator's responsibility does not end with efficient experimentation and production. The operator usually has the most daily contact with the equipment and intimately knows its capabilities and limitations.

Plant and personnel safety is sometimes forgotten in the desire to meet incentive rates, or through a casual attitude toward laboratory equipment formed over a period of months or years. Your employer probably has established a set of safety rules in your workplace. Those rules, this manual, or any other safety information will not keep you from being injured while operating your equipment.

Learn and always use safe operation. Cooperate with co-workers to promote safe practices. Immediately report any potentially dangerous situation to your supervisor or appropriate person.

REMEMBER

- **NEVER** place your hands or any part of your body in any dangerous location.
- **NEVER** operate, service, or adjust the equipment without appropriate training and first reading and understanding this manual.
- Before you start the portable drying/conveying system check the following:
    - Remove all tools from the Temperature and Humidity chamber.
    - Be sure no objects, samples or chemicals are lying on the Temperature and Humidity chamber.
- If your Temperature and Humidity chamber has been inoperative or unattended, check all settings before starting the unit.
- At the beginning of your shift and after breaks, verify that the Temperature and Humidity chamber is functioning properly.
- Report the following occurrences **IMMEDIATELY:**
    - unsafe operation or condition
    - unusual Temperature and Humidity chamber action
    - leakage
    - improper maintenance
- **DO NOT** wears loose clothing or jewelry, which can be caught while working on the equipment. In addition, cover or tie back long hair.
- Clean the equipment and surrounding area **DAILY**, and inspect the machine for loose, missing or broken parts.
- Shut off power to the Temperature and Humidity chamber when it is not in use. Turn the power switch to the **OFF** position, or unplug it from the power source.

1.6.3 Maintenance responsibility

Proper maintenance is essential to safety. If you are a maintenance worker, you must make safety a priority to effectively repair and maintain equipment.

Before removing, adjusting, or replacing parts on this Temperature and Humidity chamber, remember to turn off all electric supplies and all accessory equipment at the machine, and disconnect and lockout electrical power. Attach warning tags where possible.

Be sure that the Temperature and Humidity chamber is correctly connected to earth grounded electrical outlet that complies with current codes.

When you have completed the repair or maintenance procedure, check your work and remove your tools.

DO NOT restores power to the Temperature and Humidity chamber until all persons are clear of the area.
BEFORE you turn the Temperature and Humidity chamber over to the operator for production, verify the unit is functioning properly.

1.6.4 Reporting a safety defect

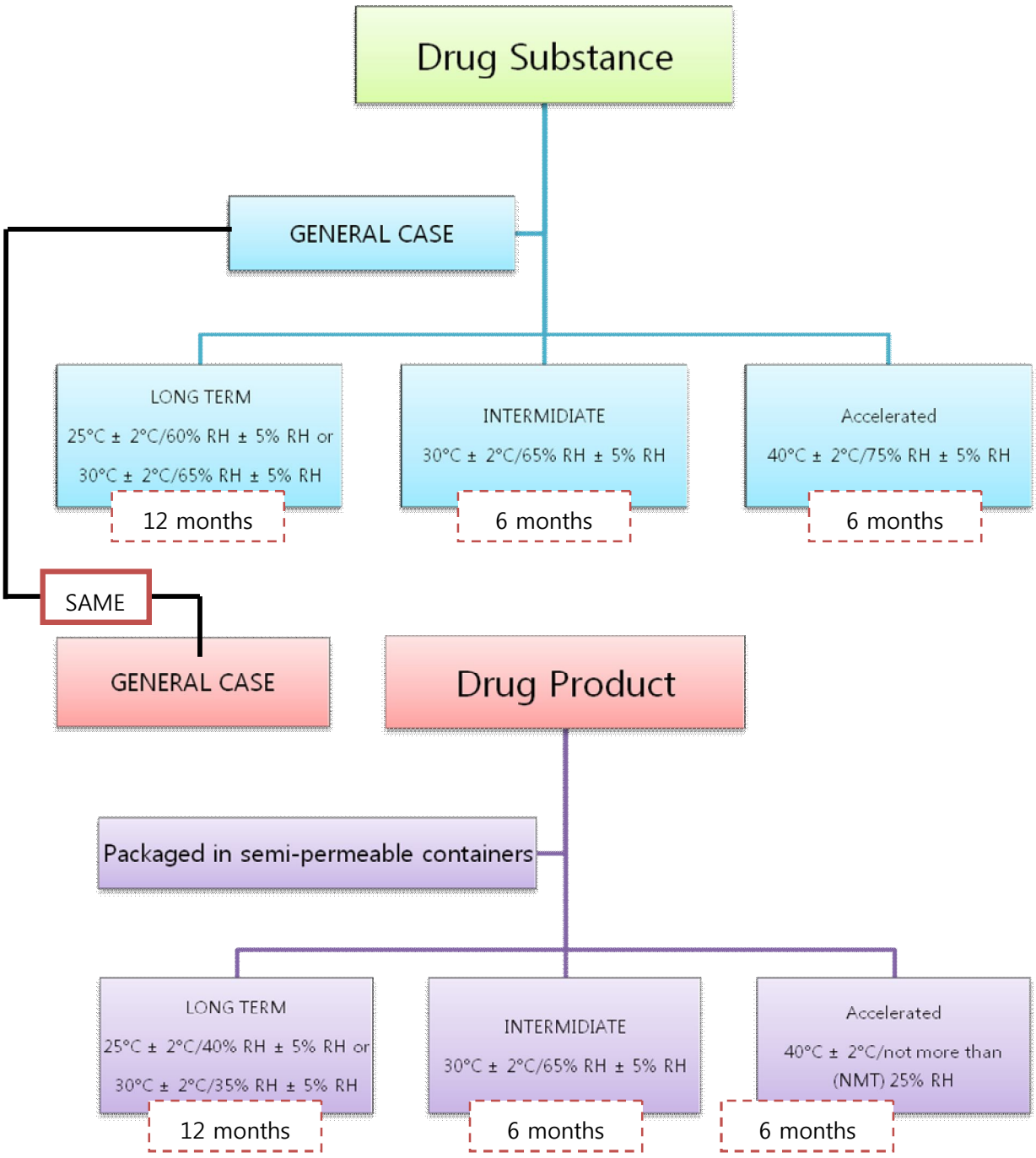
If you believe that your Temperature and Humidity chamber has a defect that could cause injury, you should immediately discontinue its use and inform Jeio Tech or local authorized distributor.

The principle factors that can result in injury are failure to follow proper operating procedures
(i.e. lockout/tag out), or failure to maintain a clean and safe working environment.

2.0 Functional Description

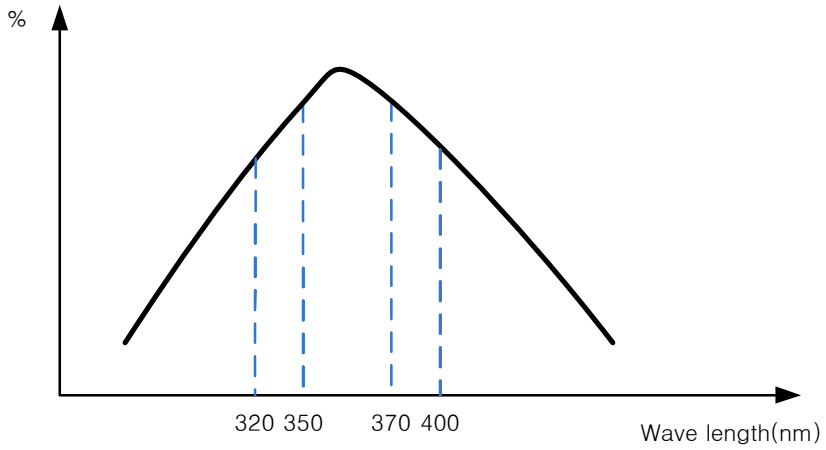
2.1 Introduction for our unit.

This unit is designed to test for Stability Testing of New Drug Substances and Products Q1A(R2) & Photostability Testing of New Drug Substances and Products Q1B by the ICH Harmonised Tripartite Guideline.
The purpose of stability testing is to provide evidence on how the quality of a drug substance or drug product varies with time under the influence of a variety of environmental factors such as temperature, humidity, and light, and to establish a re-test period for the drug substance or a shelf life for the drug product and recommended storage conditions.
The following test conditions are provided in accord with drug substance and drug product by the defined in this guideline of Q1A.



The Photostability Testing should be carried out systematically including the following tests as below;

→ Tests on the drug substance
→ Tests on the exposed drug product outside of the immediate pack; and if necessary;
→ Tests on the drug product in the immediate pack; and if necessary;
→ Tests on the drug product in the marketing pack.
And also the following test conditions are provided in accord with this guideline of Q1B.
→ For option 2 the same sample should be exposed to both the cool white fluorescent and near ultraviolet lamp.
→ A cool white fluorescent lamp designed to produce an output similar to that specified in ISO 10977(1993).
→ A near UV fluorescent lamp having a spectral distribution from 320 nm to 400 nm with a maximum energy emission between 350 nm and 370 nm; a significant proportion of UV should be in both bands of 320 to 360 nm and 360 to 400 nm.



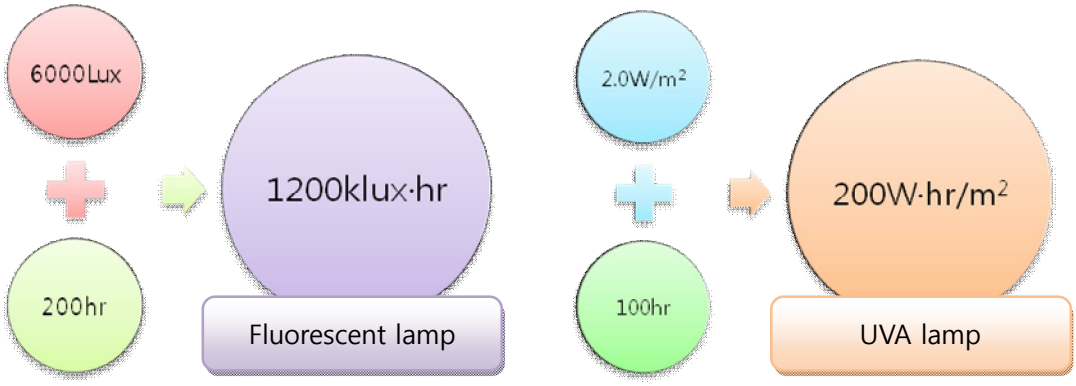
→ The procedure is the same as the following.
samples should be exposed to light providing an overall illumination of not less than 1.2 million lux hours and an integrated near ultraviolet energy of not less than 200 watt hours/square meter to allow direct comparisons to be made between the drug substance and drug product.

Fluorescent lamp

- COOL WHITE Lamp
- 1.2 million LUX-hr
- UVA LAMP

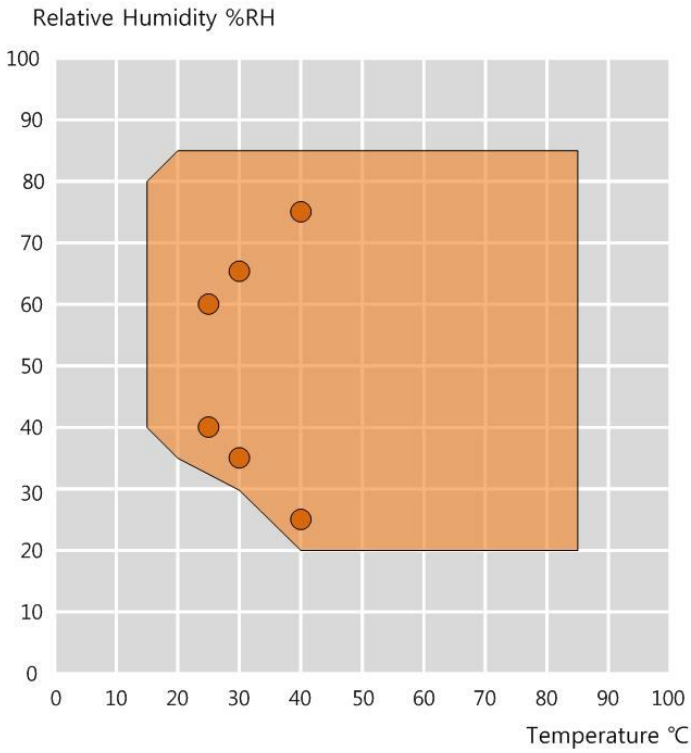
UVA lamp

- 320nm~400nm(max. 350~370nm)
- 200W-hr/m^2



2.2 Features

2.2.1 Control range of Temp. & Humid.



FULL RANGE : 20~85%RH

40 ~ 80% RH at 15℃

35 ~ 85% RH at 20℃

30 ~ 85% RH at 30℃

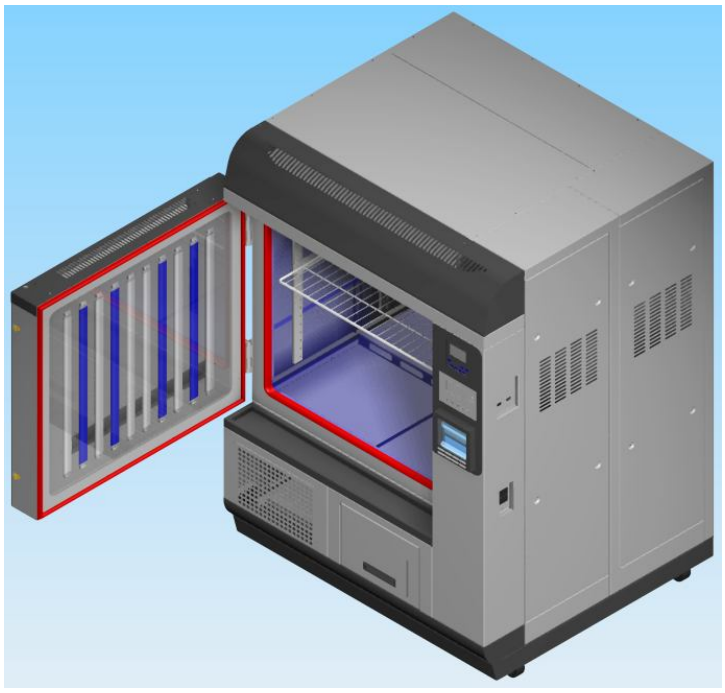
20 ~ 85% RH at 40℃~75℃

20 ~ 85% RH at 85℃

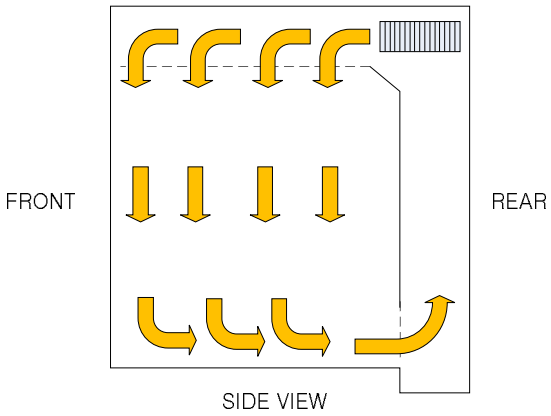
→ The spots in circle are indicated by the defined test temperature/humidity points in accord with the ICH guideline Q1A(R2).

2.2.2 Elegant design

To differentiate our brand that separates our unit from the established TH chamber, more excellent design is selected to the unit. Using natural convection heat from lamps be disposed of to the top of the structure was designed. The lamp is installed inside of the door and you can easily replace them.



2.2.3. Uniformed distribution of temp. & humid.(Up-down flow type)



Adopting 2 Sirocco fan let it maintain the optimal air flow inside of chamber with an appropriate air velocity to get the suitable temp & humid in the chamber. Opening the door will activate the automatic stop function of heater and fan to prevent from contact with an external air. Air flow is running from inhaling inner air thru the bottom of the chamber to the vertical flow passing thru an evaporator and heater. So temperature & humidity inside of chamber will controlled by the way of air flow.

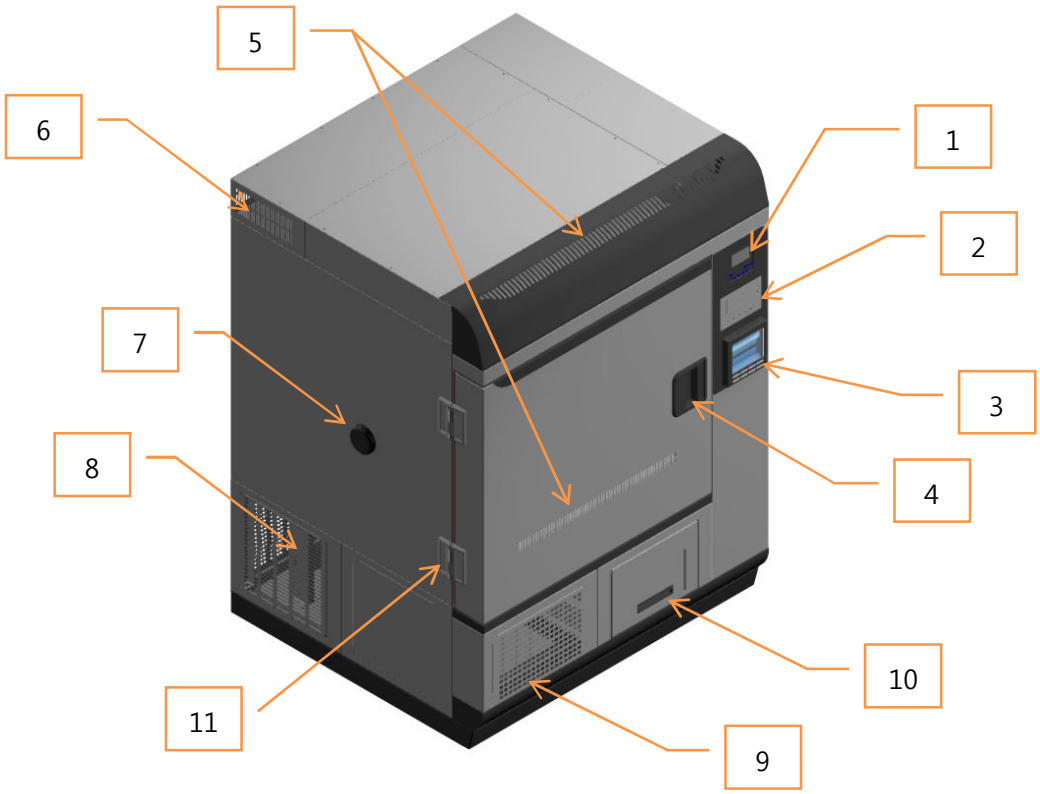
2.2.4. Designed for enhanced user's interface

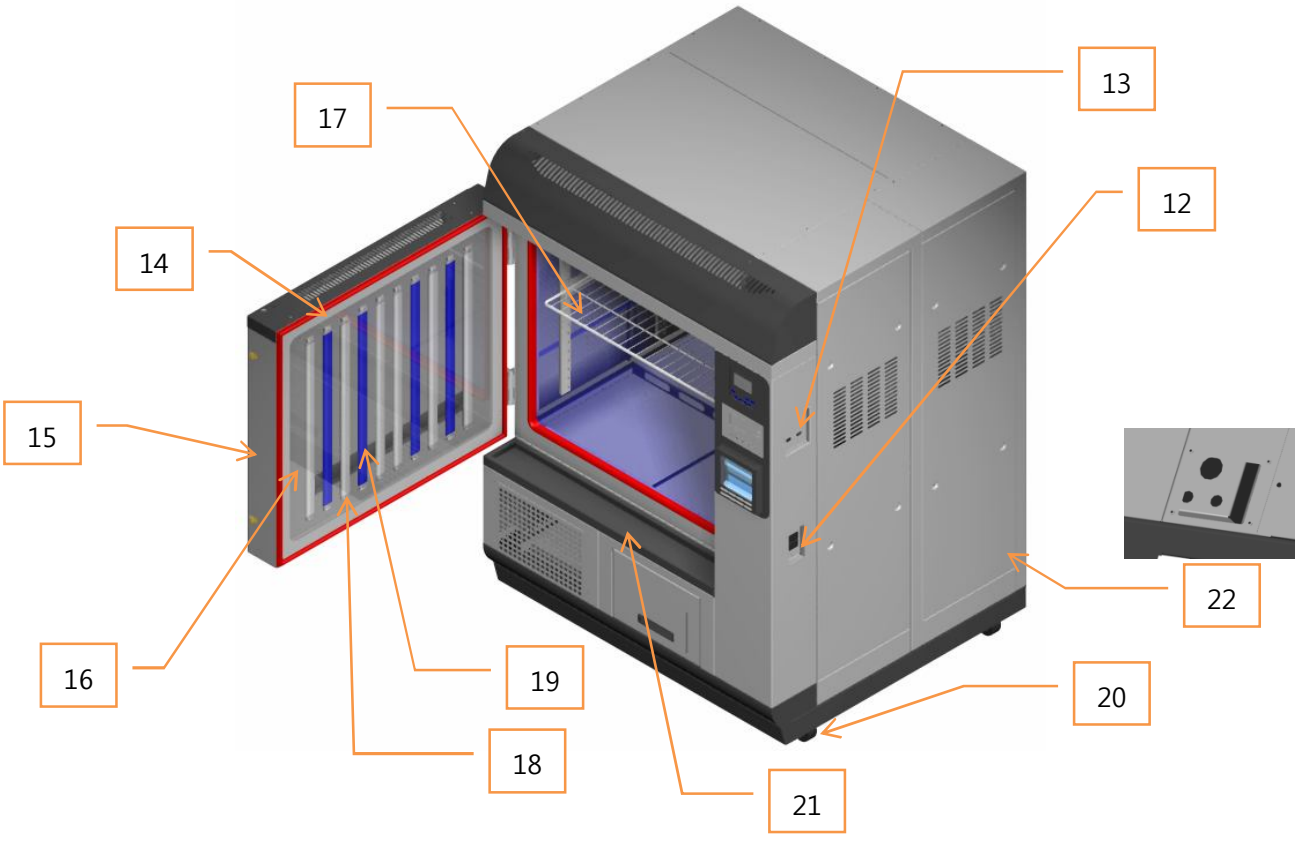
→ High quality 304 stainless steel exterior and interior
→ Casters for easy transport and installation
→ Convenient maintenance - available to check total operating time
→ Exclusive door lock & trim
→ Vice lock type door catch and foamed silicone packing ensure perfect chamber seal
→ Door open warning alarm
→ Cable port for running in wires
→ Basic hole of 50mm diameter cable port is standard equipped on left side of chambers for wiring to the specimen. We also provide additional 50 or 80mm diameter cable port (Optional)
→ Water tank for easy water supply
- Maintenance can be done easily from the front side
→ Door lock device (OPTION)
→ Periodical defrosting at below 15 degree make it for long time running with less influence of temp. & humid.

2.2.5. Safety functions

→ Leakage breaker for power supply
→ Over current protector
→ Overheat protector
→ Switch-off after alarm for over heating
→ Door opening alarm
→ Water empty
→ The alarm when the photostability test finished.

2.3 Construction



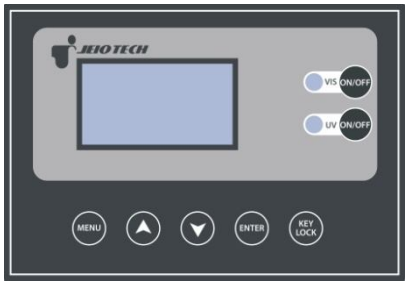


(1) Controller

- All functions are shown on the LCD Display screen with graphic & characters.
- Easy operation to push the control buttons.
- All the status of operation is monitored by graphic mode.
- Total Max. 100 programmable segments
  Max. 30 patterns supported by each segment.

(2) Lamp control board

-NO/OFF of UV & Fluorescent lamp individually can be controlled.
Pressing the menu button investigate the current strength of the cumulative value of research strength values
Survey, a screen switch to the desired value is set.
Current time is displayed through the use of 2 lamps, and also
Lamp Replacement time can be found intuitively.



(3) Recorder (Optional)

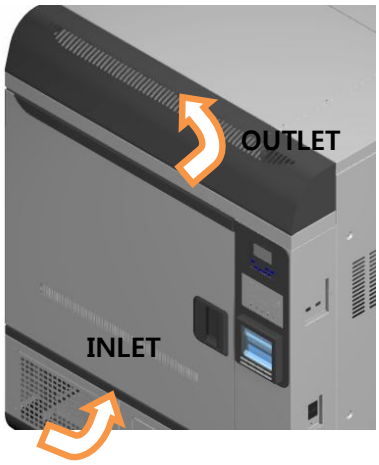
- 6 points, can display, record and store all temperature & humidity testing Values and profiles.
- Each channel is sorted out & shown on the display by temp. & Humid.
  Recording range: -60 to 150℃/ 0 to 100% RH
  Paper wide: 100mm
- Portable type
- 6 dots (Temperature: 5 dots, Humidity: 1 dot)
- Digital display
- Free power supply (100V to 240V)

(4) Handle

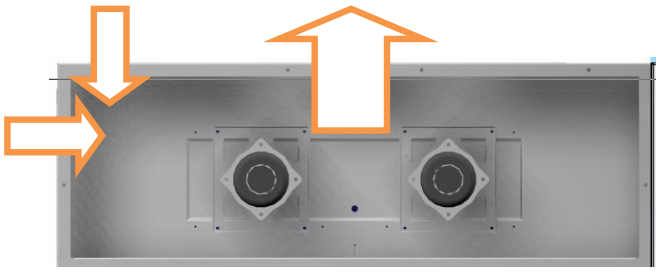
- By using plastic mold product, the user can safely close the door, designed to open the door to open and close even when the power light. You can bring them to operate a small, sealed with the chamber and more Designed to strengthen.

(5) Ventilation Hole

- UV Fluorescent and natural convection through the heat generated at the door to the outside. Perforated to dissipate as the air is discharged In this and in the perforated and can be used safely and more prolonged.
  The flow of air in the right you can see in the image.



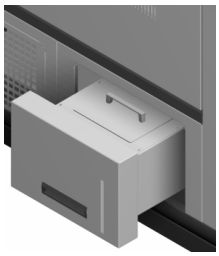
(6) Cool Air inhalation & Hot Air ventilation Hole
-This perforated air ventilation hole to be drawn
A cool air is provided for cooling down the heat
Generated from the motor & stabilizer, etc
On the upper part, and 2 rectangular fans located
On the rear part of the unit are provided
For better exchange heat capacity and better
Performance of the unit.



(7) Access port
- Basic access port is Ø50mm, and each Ø50mm or Ø80mm Access port can be added upon user's request.
-Access port is used for the passing the power cable Thru chamber for the sample test of electronic components or other Devices

(8), (9) Condensing air ventilation Hole
-Air ventilation holes (perforated plate) are located on the left side & bottom of the rear part of the unit, so hot air will be drawn off from the refrigerating system thru this ventilation holes. And air pre-filter and air-blowing perforate plate is installed in front of condensing unit for air ventilation.

(10) Water Tank
-In order to check the water volume directly and prompt response to problems,
Water tank (15L) is located on the front side.
For easy supplying water, Sliding rails are installed.
Auto water filling system is recommendable for the
Comfortable and more than the capacity of a water tank (15L).
Water purifier is also recommendable when required
The cleanliness control of test sample, or products



(11) Hinge
- Its material is strong enough to stand the heavy weight load.
- KNUCKLE JOINT made of stainless steel, excellent in strength & durability.
- Stainless cover boasts of appearance in splendor.

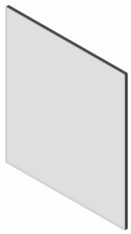
(12) Electric Circuit Breaker
-In order to protect the user, sample & unit, the suitable electric circuit breaker is adopted to meet the unit's electrical requirements and automatically cut off the electrical power in case a short circuit, or an electric leakage.

(13) Communication Port
- RS-232 Communication port is a default setting.
- RS-485 Communication port is an optional which can control Up to 9 units at the same time. (optional)

(14) Ventilation Hole
-(5) this perforated plate hole is the same function as ventilation Hole.

(15) Door Limit Switch
-If door is open by chance, or accidentally, it gives the signal alarm with stopping the operation of inner blower for user's safety by using magnetic door limit switch. It also reduces the radical change of temperature or humidity inside of chamber.

(16) Tempered glass
-Dual tempered glass to increase insulation and sealing effect and maintenance of temperature and humidity on the excellent effect.
It have also been due to negligence of use of glass protect users even more damage can be safe.

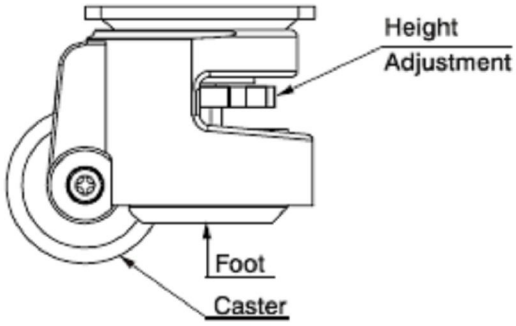


(17) Shelf
- 2 shelves are basically provided for the supporting the sample, which made of stainless steel.
- Its appearance has a fine view & clean body due to electro polishing finish.

(18) Fluorescent lamp
Philips is installed by default, and the fluorescent products readily available on the market at a reasonable price, so easy to obtain and can be replaced by the user.
- TH-ICH-300: 18W, COOLWHITE, 590mm
- TH-ICH-800: 36W, COOLWHITE, 1200mm

(19) UV Lamp
Philips is installed by default, and the fluorescent products readily available on the market at a reasonable price, so easy to obtain and can be replaced by the user.
- TH-ICH-300: 20W, black light, 590mm
- TH-ICH-800: 40W, black light, 1200mm

(20) Caster
The unit can be placed on a level on the ground
Even if it's not even ground by adjustment of caster foot.



(21) Water tray
- By any chance of a water leakage, or door chamber Condensate will build up and drop into this water tray. Just keep it clean all the time by using a dry cloth.

(22) Water Drain port
-There are 2 drain condensate ports which should be connected to a silicon rubber hose over the drain barb until is seated against the collar by tying it with a cable tie.

2.3.1. Unit other components

Evaporator	The established evaporators use the aluminum pins, so it has worry for corrosion and thermal efficiency decreasing. However, our product is removed the corrosion problem and progressed the refrigeration efficiency by using the evaporator that uses the copper pins.
Heater	The sheath type heating element for temperature is used in the established equipment in which takes lots of load to control the operation because it cause a residual heat when heating and cooling, and lots of a time for the auto tuning. However, the Nichrome(Ni-Cr) heating element newly adopted has been improved in the response speed resulting in better performance in controlling the temperature and reducing the time for auto tuning. And also the heating element for humidity is made of SUS material not to cause some problem in quality for the long time running.
Door lock	Due to the characteristics of the test for long time running, the door lock should be required to protect the test sample as an optional device.
Water Tank	the water tank(15L) located on the bottom of the front side is installed with sliding tray for easy supplying water, and also when line water supply(optional) required, the floating valve in the tank can stop the water supply when overflowing water as the 2nd safety device.
Safety device for test sample	Test sample can be protected By built-in controller preventing high-temperature, and it's alarm signal will notify the status of operation to the operator when the problem occurs.

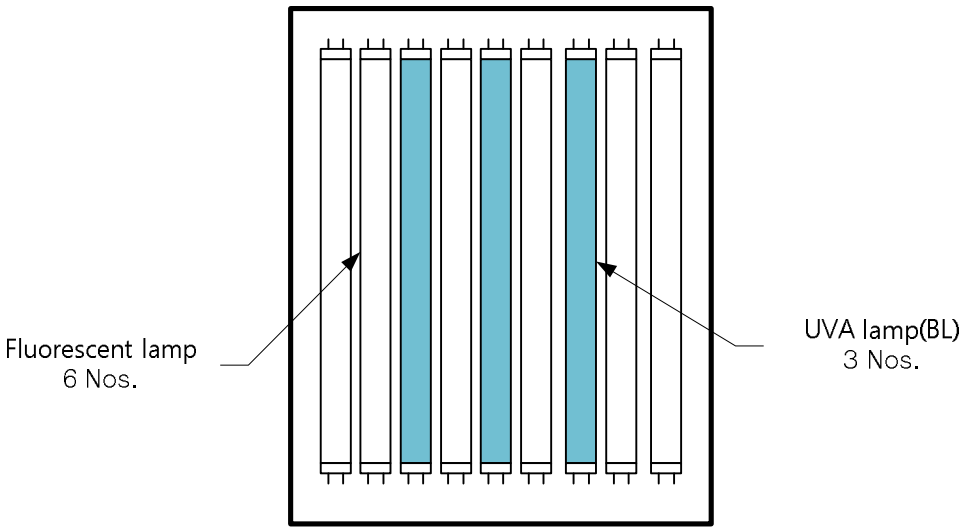
2.3.2. Lamp

Above consists of 6 florescent lamps and 3 UVA lamps.

TH-ICH-300L	TH-ICH-800L
- Fluorescent lamp: 18W, cool white, ISO 10977(1993) - UVA lamp: 20W, black light	- Fluorescent lamp: 36W, cool white, ISO 10977(1993) - UVA lamp: 40W, black light

Key features

→ Optical Detectors (UV sensor / VIS sensor) mounted on the inside, respectively, in the location of each light and then detected directly and precisely control delivery, Validation City provides a clear data
→ Convenient lamp ON / OFF
→ Display fluorescent lamp and UV lamp usage time
→ You open the door in front of the door safety switch off automatically Lamp promote user safety
→
Approximately 4,000 hours of lamp life is long-term replacement costs are cheaper



3.0 Installation

3.1 Uncrating and inspecting the unit

3.1.1 Inspecting before removing outer container

After you have received your Jeio Tech product, inspect the shipping container carefully for any damage that may have occurred during shipping. Report any damage to the carrier and to your local Jeio Tech office or the distributor from which the unit was purchased. If the container and packing materials are in re-usable condition, save them for reshipment if necessary.

3.1.2 Removing the unit from shipping container

The unit is shipped on a wooden skid with an outer and inner container. The wooden outer container is bolted to the shipping skid and has a protective vinyl cover stapled to the container's top. Under the outer container the incubated shaker is covered with a cardboard box and strapped to the skid.

We have segmented the process into 3 phases. Use the following instructions to remove the incubated shaker from the outer and inner containers

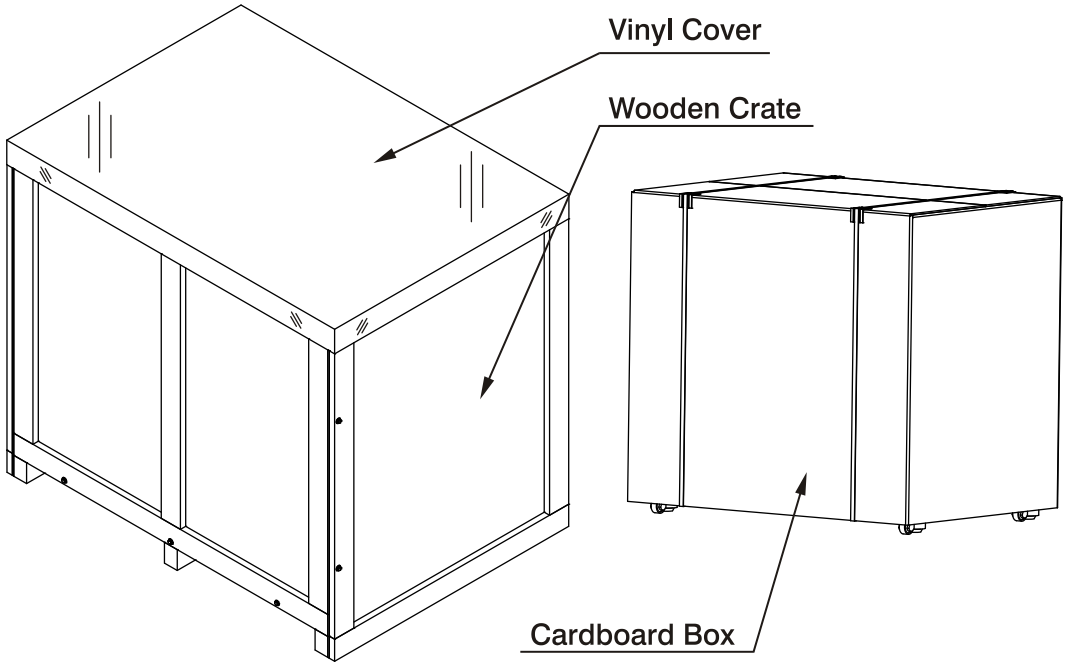
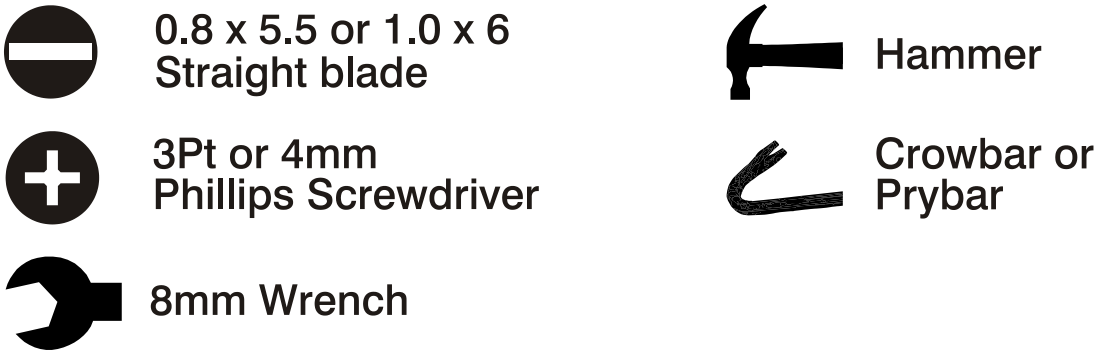


Figure 3.1

3.1.2.1 *Phase 1: Removing the outer container*



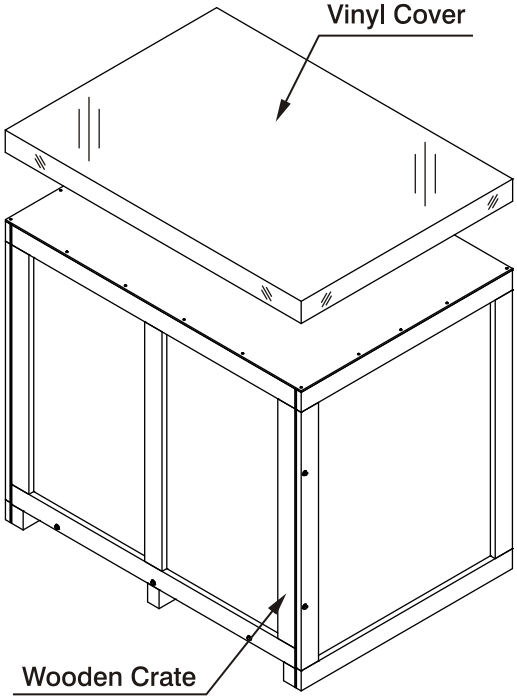


Figure 3.2

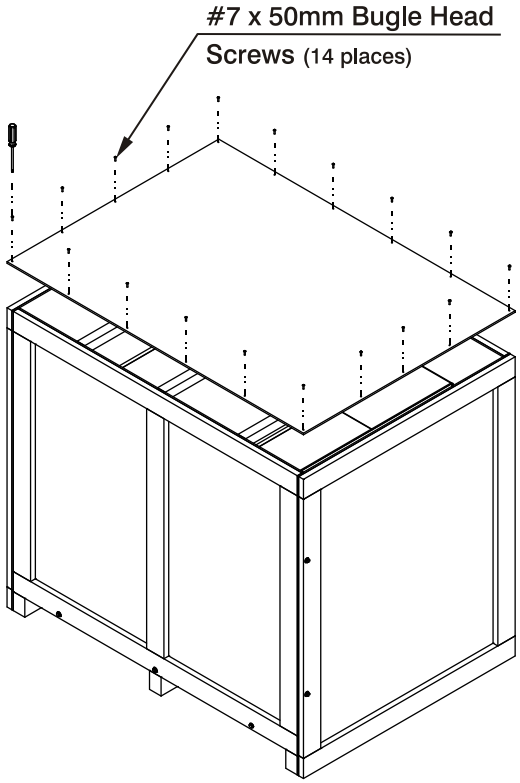


Figure 3.3

Step1: Remove the staples holding the vinyl cover to the wooden crate with a straight blade screwdriver.
Step2: Lift the vinyl cover off the wooden crate.
Step3: Inspect the wooden container top for signs of moisture infiltration around the screws.
Step4: Remove the fourteen (14) #7 x 50mm Bugle head screws with a 3Pt Phillips screwdriver. See Figure 3.3..
Step5: Remove the wooden container top.

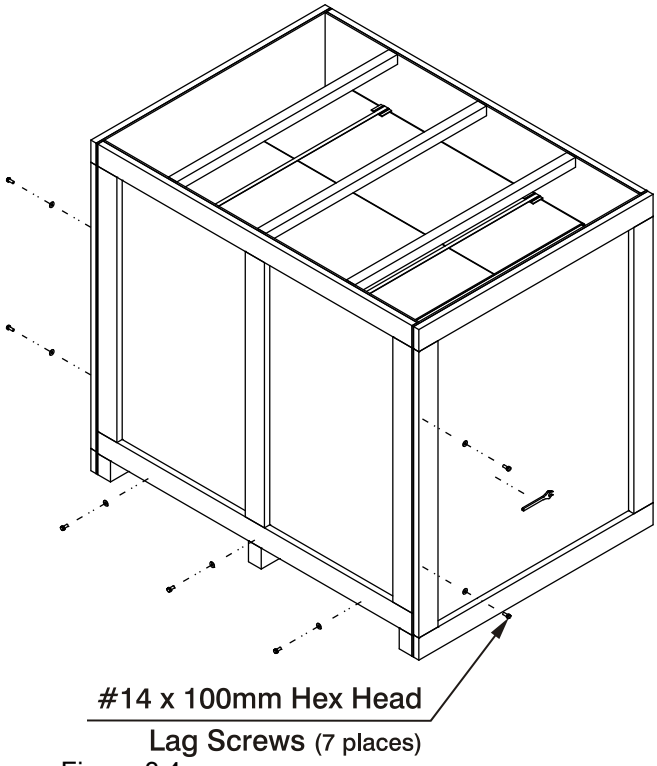


Figure 3.4

Step6: Remove the seven (7) #14 x 100mm hex head lag screws holding the container front to the shipping skid and container sides. See Figure 3.4.

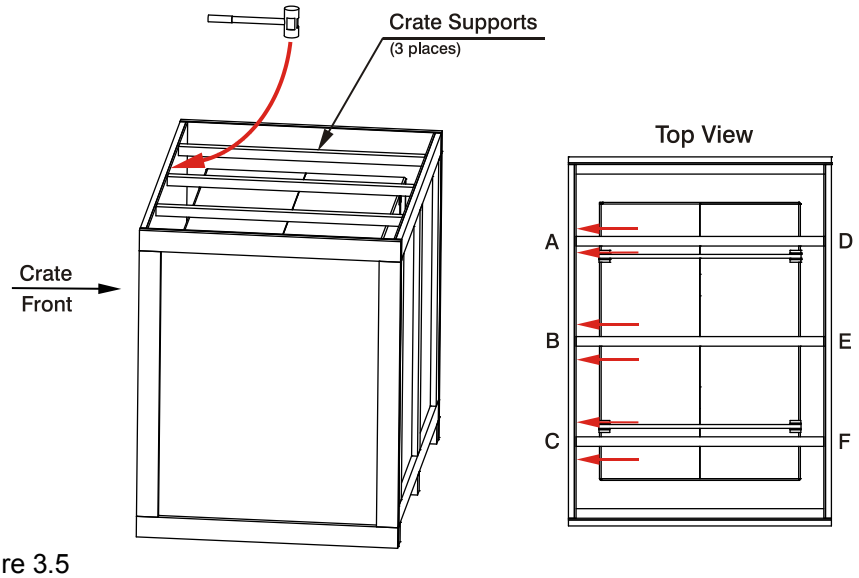


Figure 3.5

Step 7: Remove the crate front from the crate supports at points A, B and C using a hammer and/or crowbar. See Figure 3.5.

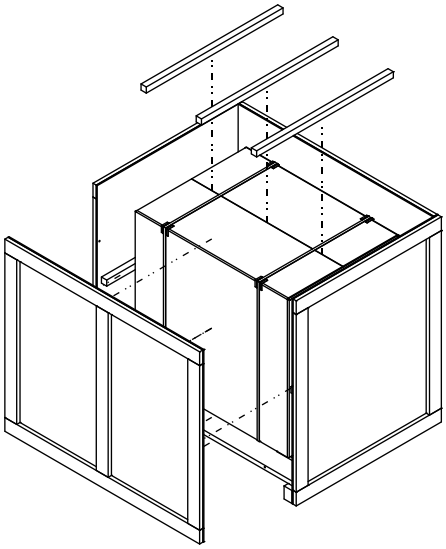


Figure 3.6

Step 8: Remove the crate supports from the crate back at points D, E, and F using a hammer and/or crowbar. See Figures 3.5 and 3.6.

.

⚠ CAUTION

PANEL IS HEAVY! Dropping crate panel can cause minor or moderate personal injury. To avoid injury have assistance in holding and removing the crate panel.

NAILS/STAPLES ARE SHARP! Be careful when removing crate panel and supports contact with nails/staples could cause minor or moderate personal injury. To avoid injury use hammer to bend over or remove, and keep hands and other body parts away from nails/staples.

3.1.2.2 Phase 2: Removing the unit from skid

ICH chamber is shipped with the caster feet in the locked position.
Additionally, blocking is used to lock the casters and the unit in place. Use the following procedure to remove the unit from the skid using a forklift.

Do not use manpower in any cases because it's heavy for men to lift.

Using forklift
Tool required
None

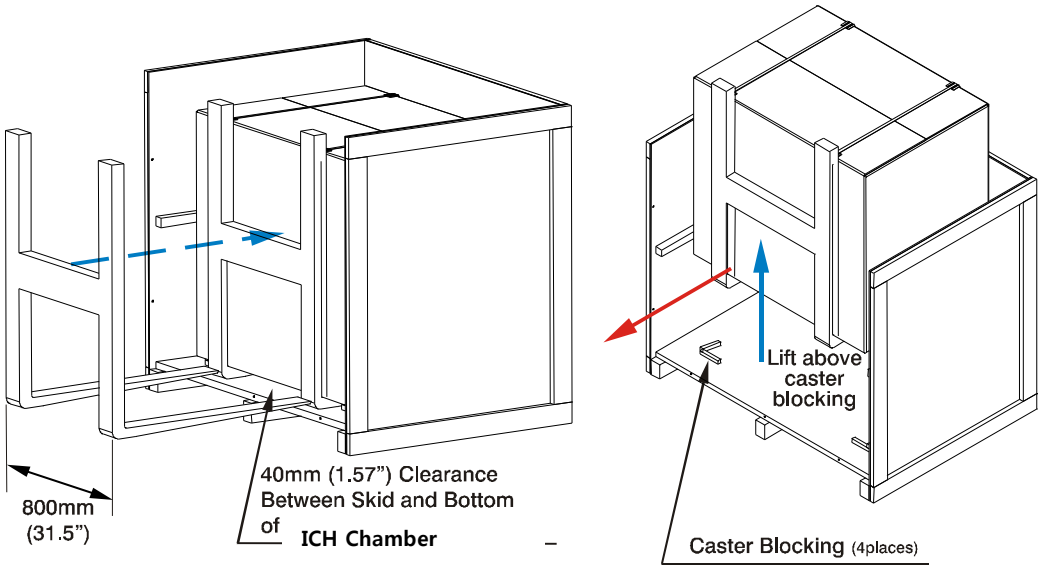


Figure 3.7

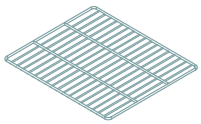
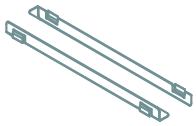
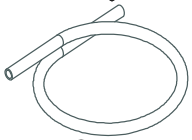
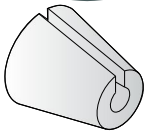
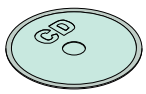
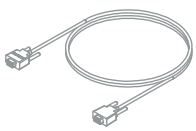
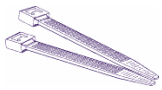
Step 1: Carefully slide forklift forks under the incubated shaker. Forks should be set so that outside to outside fork dimension is 800mm. See Figure 3.7.

Step 2: Slowly lift incubated shaker above the caster blocking and carefully pull the unit out of the crate.

Step 3: Set the incubated shaker on the floor so it rests on the caster feet.

3.2 Unit components

After unpacking, please check the contents to ensure you have received all of the following unit components. Also, check the identification plate on the side of the unit to make sure you received the model number your ordered.
If you didn't receive one or more of the components or if the model is incorrect, contact your local Jeio Tech office, or the distributor from which the unit was purchased.

COMPONENT		QUANTITY	RECEIVED
Unit		1	
Shelf		2	
Shelf bracket		4	
User instruction		1	
Controller instruction		1	
Drain hose		2	
Access port stopper		1	
Plug & consent		1	
communication software CD(OPTIONAL)		1 (optional)	
Cable for communication (OPTIONAL)		1 (optional)	
Cable tie		4	

3.3 Preparing the Location

3.3.1 Space requirements

ICH chamber is manufactured as the size of Figure 3.10. It is essential the unit to be situated in an area where there is minimum space 1.2m for the front-ward due to 890mm in width of the door.

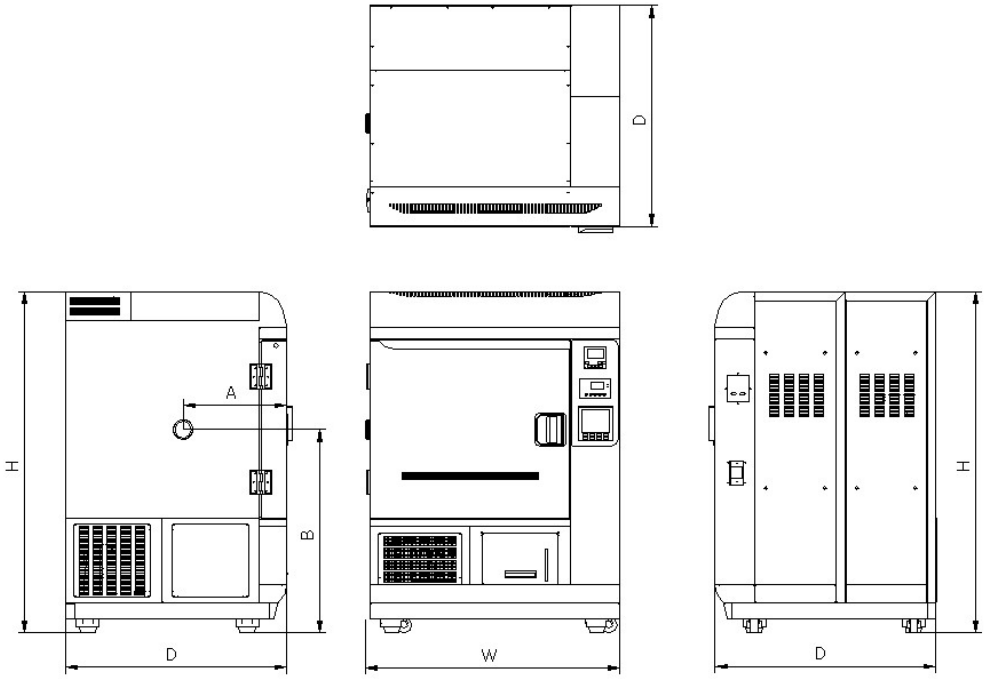


Figure 3.10

Model	W(mm)	D(mm)	H(mm)	A(mm)	B(mm)
TH-ICH-300	1130	985	1520	460	905
TH-ICH-800	1220	1215	1955	545	1185

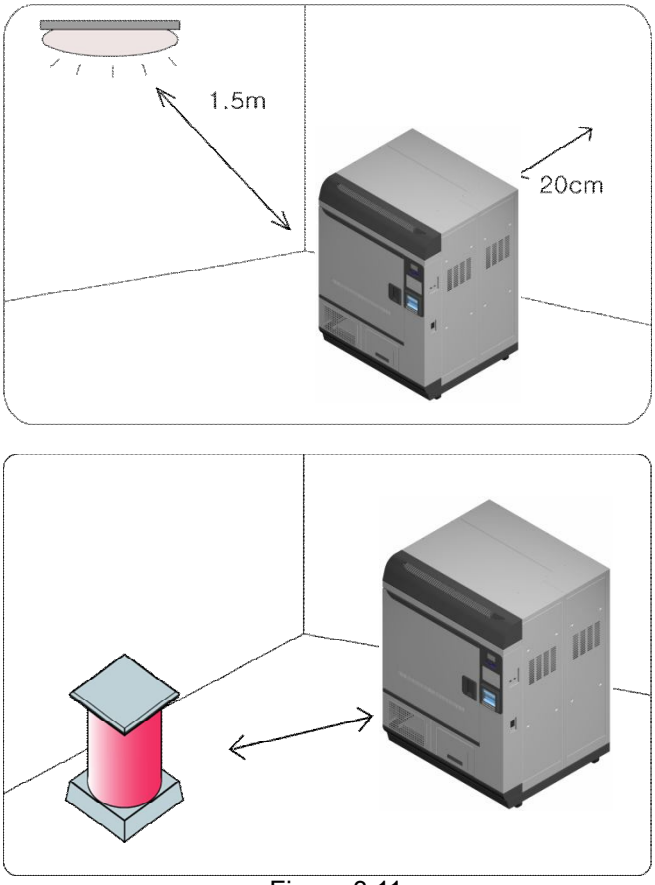


Figure 3.11

1. The surface where you place the unit should be smooth, level and sturdy not to be shocked or fell down.
2. The unit requires a minimum space more than 1.5m from the lighting device and more than 20cm from the wall.
3. The floor should be level, and of solid construction to prevent from any vibration or a noise.
4. Temperature at the location to be installed should be below at 30C, 80%RH, and the place should be located away from the stove or Heater generating heating source..
5. Be careful when moving the unit due to its heavy weight.

3.3.2 Environmental setting

The unit can be operated properly under the following environmental conditions for a long time running without any problem.

No direct sunlight on incubated shaker

Ambient temperature: 18^{O}C to 30^{O}C

Relative humidity not to exceed 85%

Altitude not to exceed 2000m (6,562 feet)

Keep incubated shaker away from high frequency noise produced by equipment and/or machinery, such as electrical distribution panels, welders, induction heating mechanism, and large amounts of SCR (Silicon-controlled rectifiers). See Section 6.4—Troubleshooting, Electrical—for the effects of high frequency noise.

Connect the incubated shaker to earth grounded terminals only.

3.4 Locking/Unlocking Casters & Leveling the unit

The caster assembly allows for easy movement, locking and leveling of the unit. For proper agitation, it requires the unit to be level side to side and front to back. Use the following instructions to ensure the unit is level.

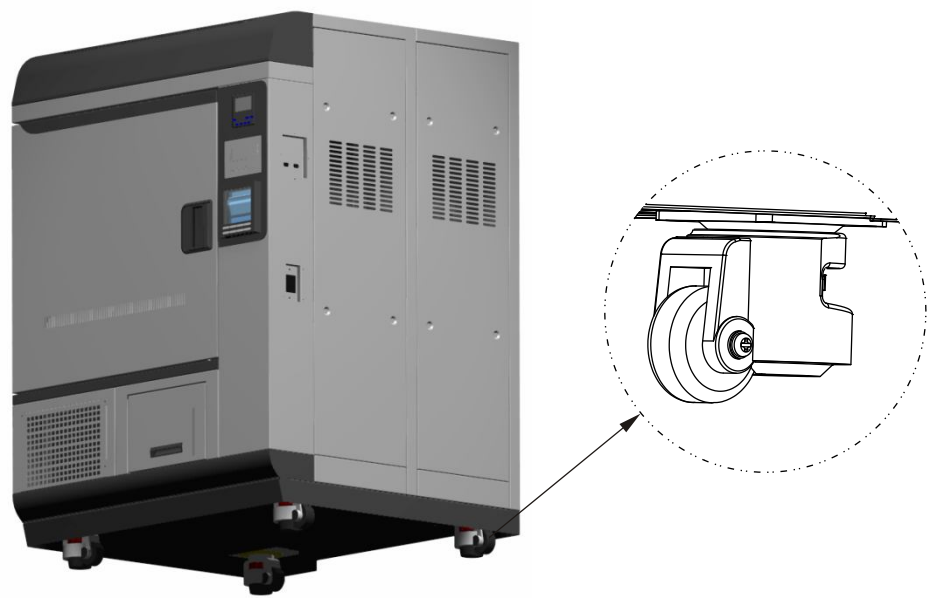


Figure 3.12

Tool required

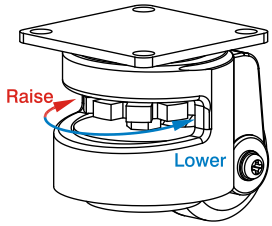
Level

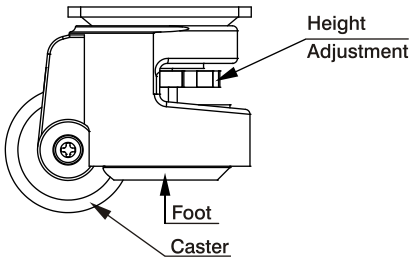
Step 1: Place the unit in its location.

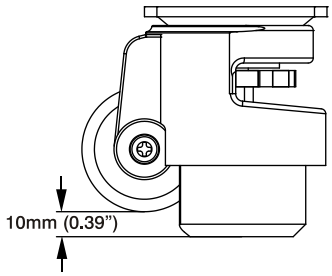
Step 2: Lower the foot of each caster by turning the red height adjustment counterclockwise until it hits the floor. Turn the height adjustment a quarter turn or more to ensure the unit's weight is taken off the caster. This will lock the unit in place.

Step 3: Place a level on the top of the door and check for level side-to-side and front-to-back.

Step 4: Turn the height adjustment to raise or lower the unit until one is level.

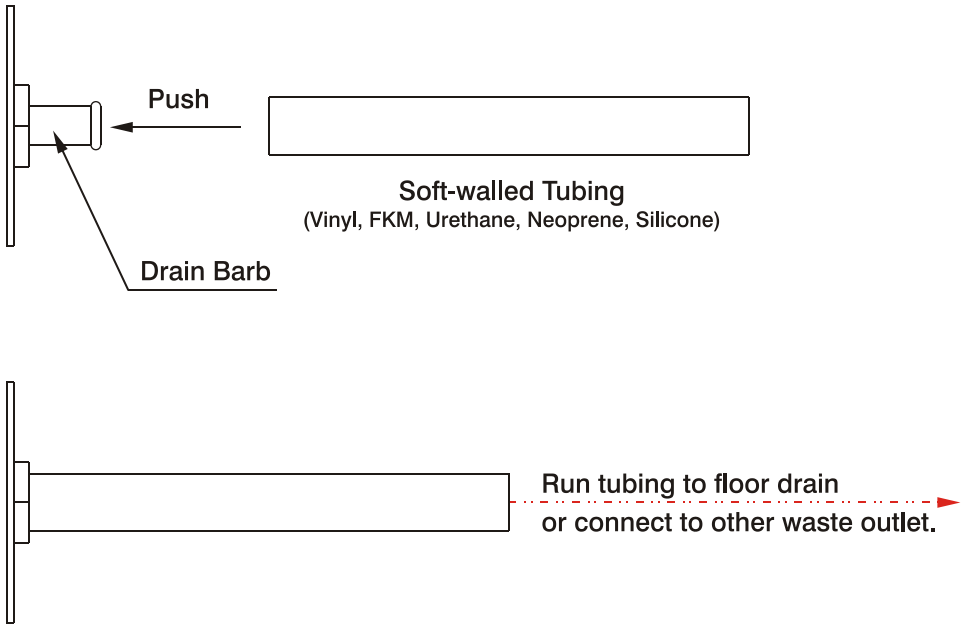






3.5 Attaching Condensate Drain

2 Condensate drains are installed on the rear side of the unit. These condensate drains are designed, one for eliminating any water build up from the inside of chamber heats and cools, the other for escaping water overflowed from the inside of chamber. To connect the condensate drain to a floor drain or any other waste the outlet push Ø6mm ID soft-walled tubing, such as: vinyl, FKM, urethane, neoprene or silicone, over the drain barb until is seated against the collar, then, tie it with a cable tie as shown below



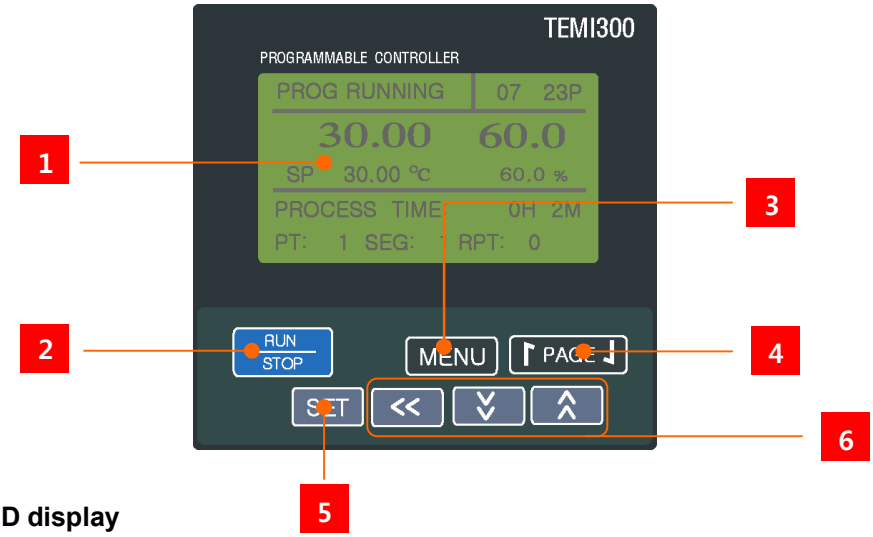
3.6 Pre start-up checks

→ Make sure all unit and wall outlet electrical connections are tight.
→ Make sure condense drain hose is tightly on hose barb and hose is run to a drain.
→ Make sure caster feet are lowered and have locked the unit in place.
→ Make sure the unit is level side to side and front to back.
→ Make sure there are no flammable or explosive liquids inside of chamber

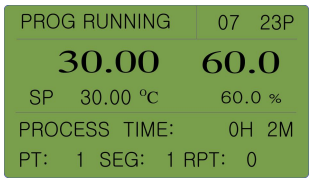
4.0 OPERATION

4.1 Controller

4.1.1 Name and function



1 : LCD display

	Check and monitor unit's operation.

2~6: Keys

RUN / STOP	To start and stop operation.
MENU	1. To move from running display to MAIN MENU display. 2. To move a display to another display such as PARAMETER setting display.(vertical movement)
PAGE	To move previous or next screen in same category.
SET	1. To choose display movement in MENU display. 2. To enter set value or modify set value. 3. To move digit point during modifying set value.

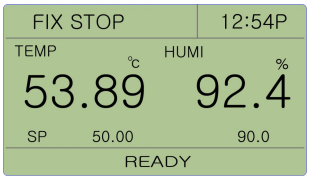
<<	1. To move left or right in MENU or Parameter setting display.(horizontal movement) 2. To move digit point during modifying set value.

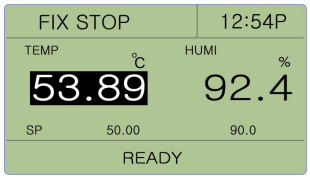
	1. To move down in MENU or Parameter setting display. 2. To decrease value of Arabic numbers or to change text.
	1. To move up in MENU or Parameter setting display. 2. To increase value of Arabic numbers or to change text.

4.2 Controller operation

4.2.1. FIX RUN

4.2.1.1. FIX control





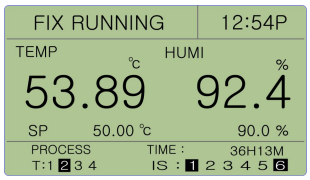


Fig.1.

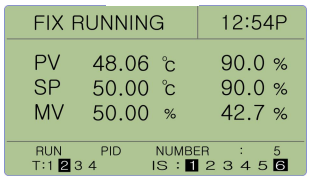


Fig.2.

FIX RUN

1. Turn on Main power.
2. How to operate : Press SET key and move to Temperature and Humidity input display.

Input Temperature and Humidity

(Use UP, DOWN, and SHIFT KEY to input value.)

1. TEMP ONLY
   Set only temperature value without humidity controlling.

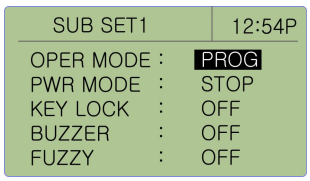
2. TEMP & HUMI
   Set and control both temperature and humidity.

3. Press SET key to move to FIX STOP stand-by screen.

How to start FIX RUN

Press RUN STOP key to operate unit.

☞ Fig.1. shows FIX RUN mode when press RUN STOP and Fig.2. displays when pressing PAGE key.



NOTE Switching display between **FIX and PROG**

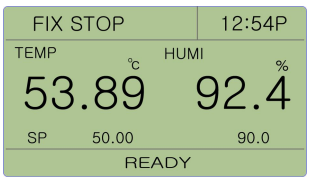
MENU → **FUNCTION** → SET → **SUB SET** → SET → **SUB SET1** →

(Use UP, DOWN, and SHIFT KEY to choose mode.)

SUB SET1

▶ **OPER MODE:** Choose either FIX or PROG by using SET key.

4.2.1.2. FIX mode



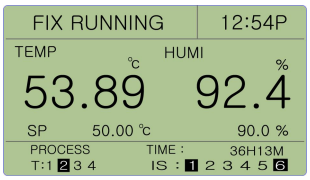
FIX STOP

FIX mode : Control one point of temperature and Humdity.

FIX STOP : It indicates stop of running.

SP : set value of each temperature and humidity.

READY : It indicates stand-by status. Unit can starts or stop running by pressing RUN/STOP key.



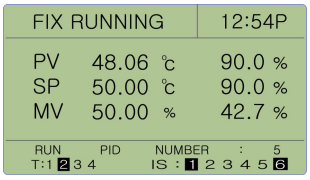
FIX RUNNING(First screen)

FIX RUNNING : Unit is running.

PROCESS TIME : It indicates running time of unit.

T : It indicates number of ON/OFF operation.

IS : It indicates number of Inner Signal operation.



FIX RUNNING(Second screen)

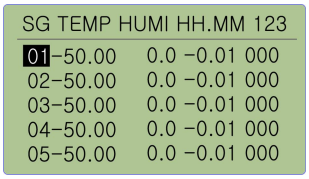
PV : It is the value of sensor which indicates temperature and humidity inside chamber.

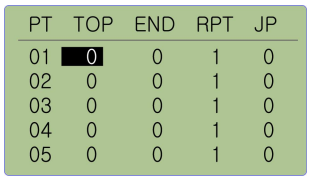
MV : Current output.

RUN PID NUMBER : It indicates number of operating PID. (Temp, Humi AUTO TUNING displays during AUTO TUNING.

4.2.2 PROG Mode

4.2.2.1. PROG mode





PROG mode

1. Turn on Main Power.
2. Each SEGMENT and PATTERN should be programmed for PROG RUN.

PROGRAM editing

MENU → **PROGRAM** → SET → **EDIT SET** → SET

EDIT SEG

1. Set value of temperature, Humidity, and running time at each SEGMENT.

^^ vv << SET

(Use UP, DOWN, SHIFT KEY to input value.)

1. TEMP ONLY
   Set only temperature value without humidity control.
2. TEMP & HUMI
   Set and control both temperature and humidity.
3. Press MENU key to escape from PROGRAM screen.

EDIT PT

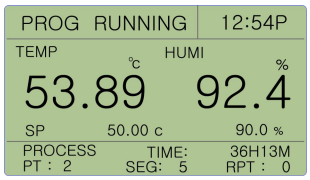
EDIT SET → Press SET key to edit PATTERN.

EDIT PATTERN

1. Input last of SEGMENT(END) and first of SEGMENT(TOP) at each PATTERN(01 ~ 10).
2. Input number of repetition(RPT).
3. Input JUMP PATTERN(JP) : If 3 is input at PT(01), segment connects from PT(01) to PT(03).

PT	TOP	END	RPT	JP
01	1	3	2	3
02	1	4	1	0
03	1	4	1	0
04	2	4	1	0
05	5	5	1	0

Ex) Unit operates 2 times of repetition of PT(01) and skip PT(02). Program stops after PT(03) performs 1 of repetition from 1st segment to 4th



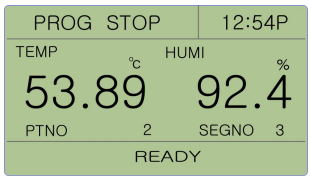
PROG RUNNING

1. Press MENU key and PROG STOP screen shows.
2. Press SET key to activate number of PT No. Once it is activated, start segment can be set.
   ex) If you set PTNO 2, PATTERN starts from 02.
3. Press SET key to finish PTNO set.

PROG RUNNING starts

Press RUN/STOP key to start operation.

4.2.2.2 PROG Mode



PROG STOP

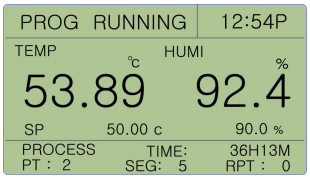
PROG mode : Control temperature and humidity with program.

PTNO : It indicates PATTERN number which is set.

Press SET KEY to set.

SEGNO : It indicates number of start SEGMENT.

READY : It indicates stand-by status. Unit can starts or stops running by pressing RUN/STOP key.

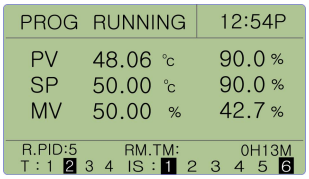


PROG RUNNING(First screen)

PROG RUNNING : Unit is running.

PROCESS TIME : It indicates running time of unit.

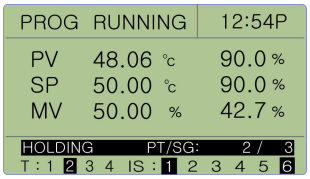
RPT : It indicates number of repetition of PATTERN.



PROG RUNNING(Second screen)

R.PID : It indicates number of operating PID.

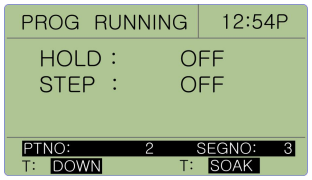
RM.TM : It indicates remaining time of operation.



PROG RUNNING(Third screen)

HOLD ON: It indicates current holding PT and SEG.

HOLD OFF: It indicates RUNNING status.



PROG RUNNING(Forth screen)

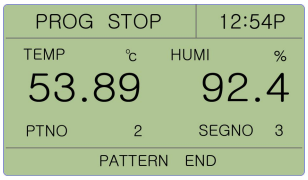
HOLD : Current SP(set point) can be HOLD ON or HOLD OFF.

STEP : Stop current segment and move to next segment.

DOWN : It indicates period of decrease of set value.

SOAK : It indicates maintenance of set value.

UP : It indicates period of increase of set value.

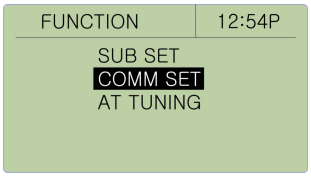


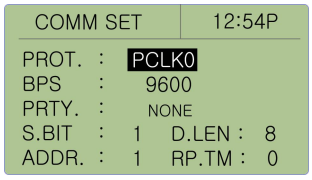
PROG STOP

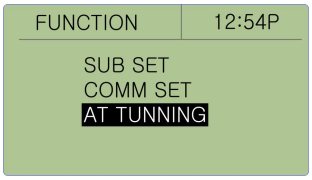
PATTERN : It indicates stop of running.

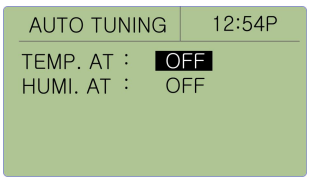
4.2.3. Operating and setting of MAIN display

4.2.3.1. COMM SET









COMM SET

MENU → **FUNCTION →** SET → **COMM SET →** SET

(Use UP, DOWN, and SHIFT KEY to set.)

ADDRESS set

ADDR : Input ADDRESS(1 ~ 99)

Maximum 9units can be controlled with RS-485 interface by PC.
Set protocol as PCLK1.

AT TUNING

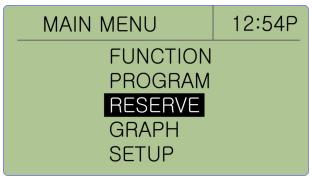
To move AT TUNING screen;

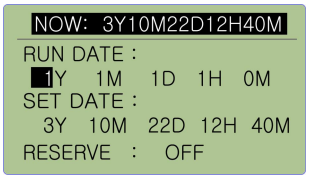
MAIN MENU → FUNCTION → AT TUNING → SET KEY

☞ **It can be set and performed only FIX RUN mode.**

AT TUNING can be performed only FIX RUN MODE. It performs with set value of temperature and humidity. PID value is stored automatically in PID GROUP when finished.

4.2.3.2 RESERVE set



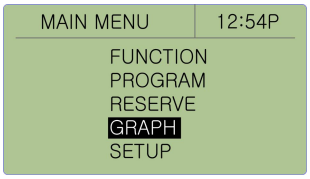


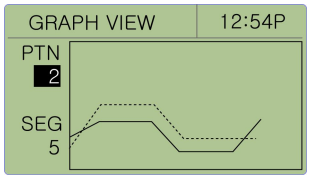
MAIN MENU(RESERVE)

MENU → RESERVE SET

NOW : Current Year, Month, Day, and Time.
RUN DATE : Delay on Year, Month, Day, and Time.
SET DATE : Current Year, Month, Day, and Time of NOW DATE.
RESERVE : ON – set or OFF – no delay on.

4.2.3.3 Graph





MAIN MENU(GRAPH)

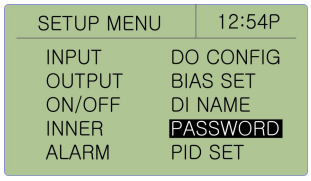
MENU → GRAPH SET

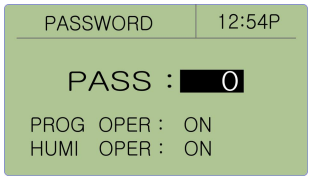
GRAPH VIEW

Temperature and humidity can be expressed as graph of each SEGMENT of each PATTER.
PTN : Set PATTERN number which you want to see.
SEG : It indicates start number of SEGMENT.

4.2.4. SETUP

4.2.4.1. Password





SETUP(PASSWORD)

MENU KEY → SETUP → DI NAME → SET KEY

(Use UP, DOWN, and SHIFT KEY to set.)

PASSWORD

Change password by press SET KEY → UP, DOWN, and SHIFT KEY. Press SET key to save password.

PROG OPER : ON ⇒ OPER MODE is changeable.

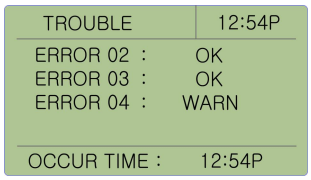
OFF ⇒ OPER MODE is not changeable.

HUMI OPER : ON ⇒ 2-LOOP(Temperature/Humidity)

OFF ⇒ 1-LOOP(Temperature)

☞ **RUN 시에는 PROG OPER cannot be changed during Running.**

4.2.4.2. TROUBLE



TROUBLE

"WARN" message displays when system is abnormal (DI2 ~ DI4)

If any trouble happens, unit stops.

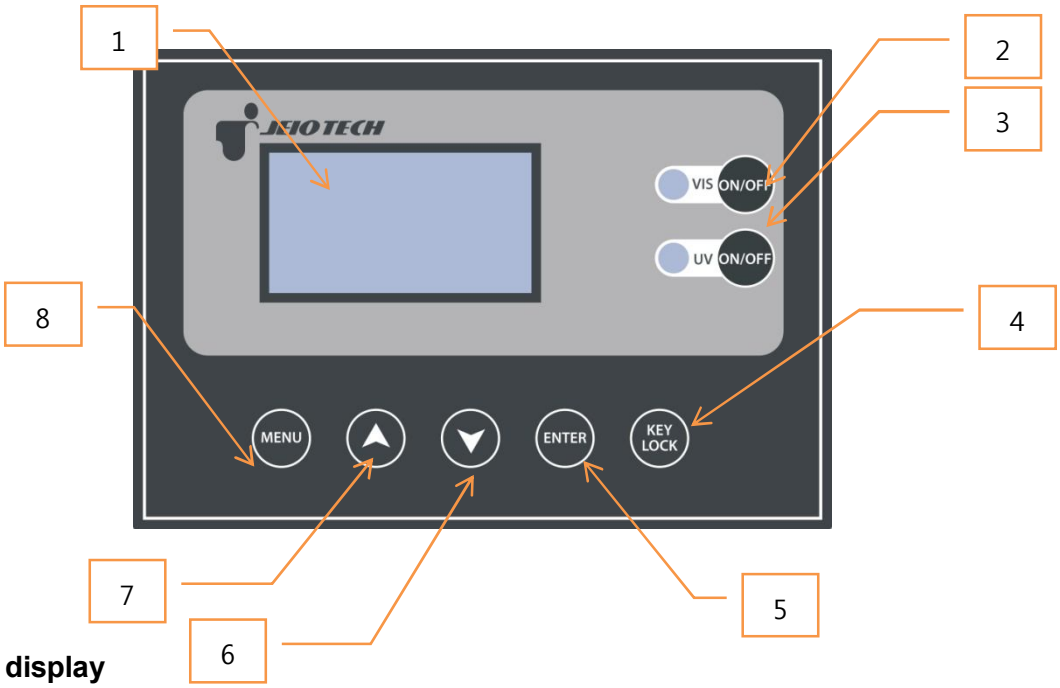
ERROR 02 : O-T WATER (over heated humidity heater)

ERROR 03 : DOOR OPEN

ERROR 03 : W-T LEVEL (rack of water)

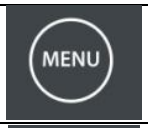
4.3 Lamp Controller

4.3.1 Name and function



1 : LCD display

2~8 : keys

	Current value, run value, setting mode can be changed by pressing MENU key.
	Either fluorescent lamp or UV lamp can be selected in setting mode. Value can be adjusted.
	Either fluorescent lamp or UV lamp can be selected in setting mode. Value can be adjusted.
	Set value is saved by pressing ENTER key.
	1. Lock operation keys : Press and hold KEY LOCK key more than 2 seconds. 2. Unlock operation keys : Press and hold KEY LOCK key more than 2 seconds.
	Fluorescent lamp can be ON/OFF independently.
	UV lamp can be ON/OFF independently.

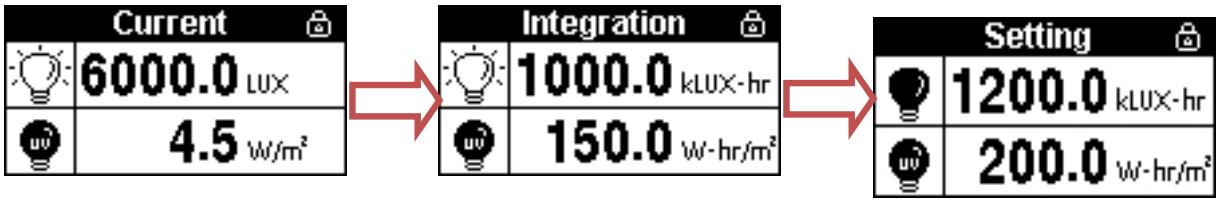
4.3.2 Operation

4.3.2.1 Key to turn on or off fluorescent lamp.

4.3.2.2 Key to turn on or off UV lamp.

4.3.2.3 Change of Mode

Mode is changed whenever press MENU key as below.



→ Current mode: Current amount of light displays.
→ Integration mode: Integrated amount of light displays.
→ Setting mode: Wish integrated amount of light can be set.

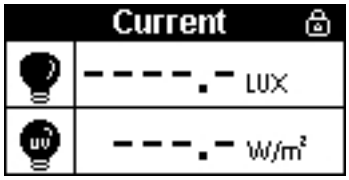
4.3.2.4 How to set amount of light

1) Press MENU key 2 times to move to SETTING MODE.

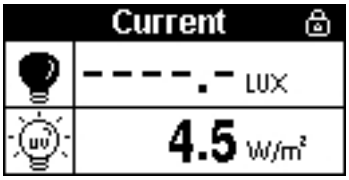
2) Select either fluorescent or UV lamp by using up/down keys. Selected lamp changes dark color.
3) Set value by using up/down keys and press ENTER to save value.

4.3.2.5 In case of lamp is not on.

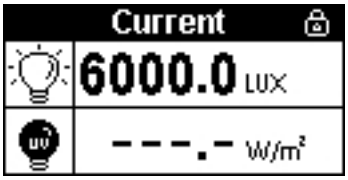
<Both lamps are off>



<FL lamp is off>



<UV lamp is off>

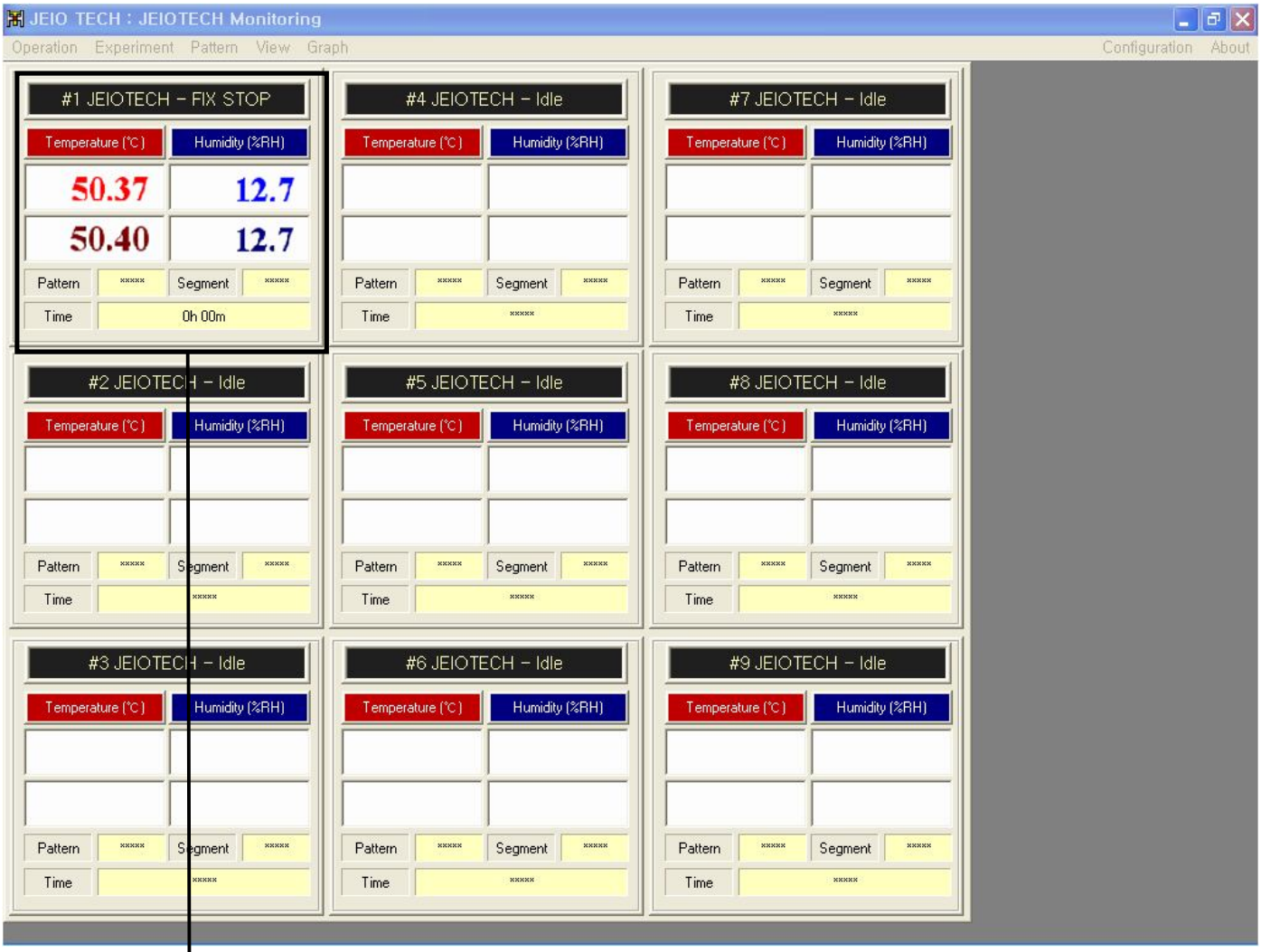


4.3.2.6 mark indicates lock status(KEY LOCK).

5.0 How to use Software

5.1. Initial display

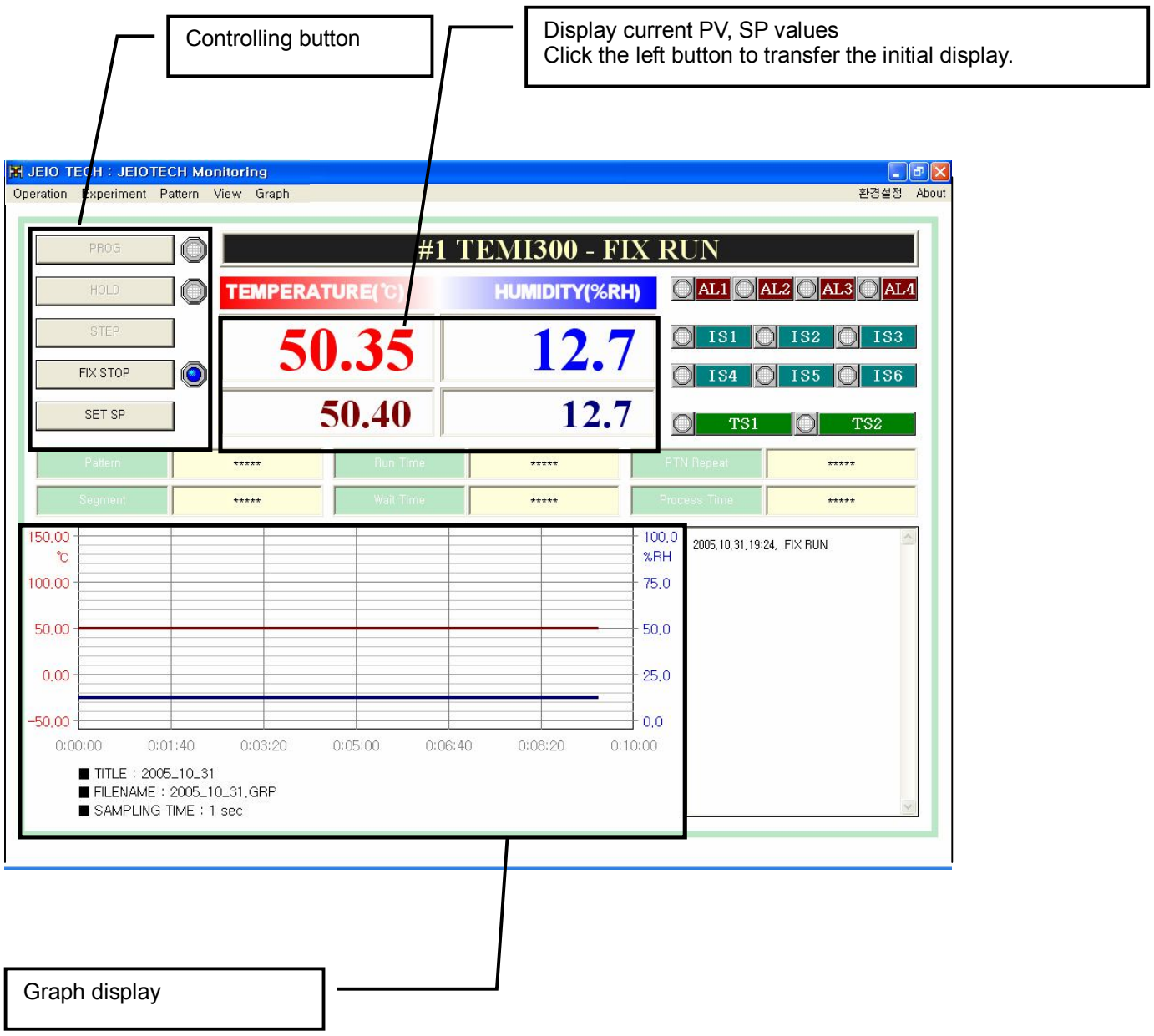
This is the initial display of TEMI300_Multi Monitoring program operated. It can make TEMI300 monitor maximum 9units, easily up/download the program and control the saved data.



(figure.1) initial display

5.2. Separate operating display

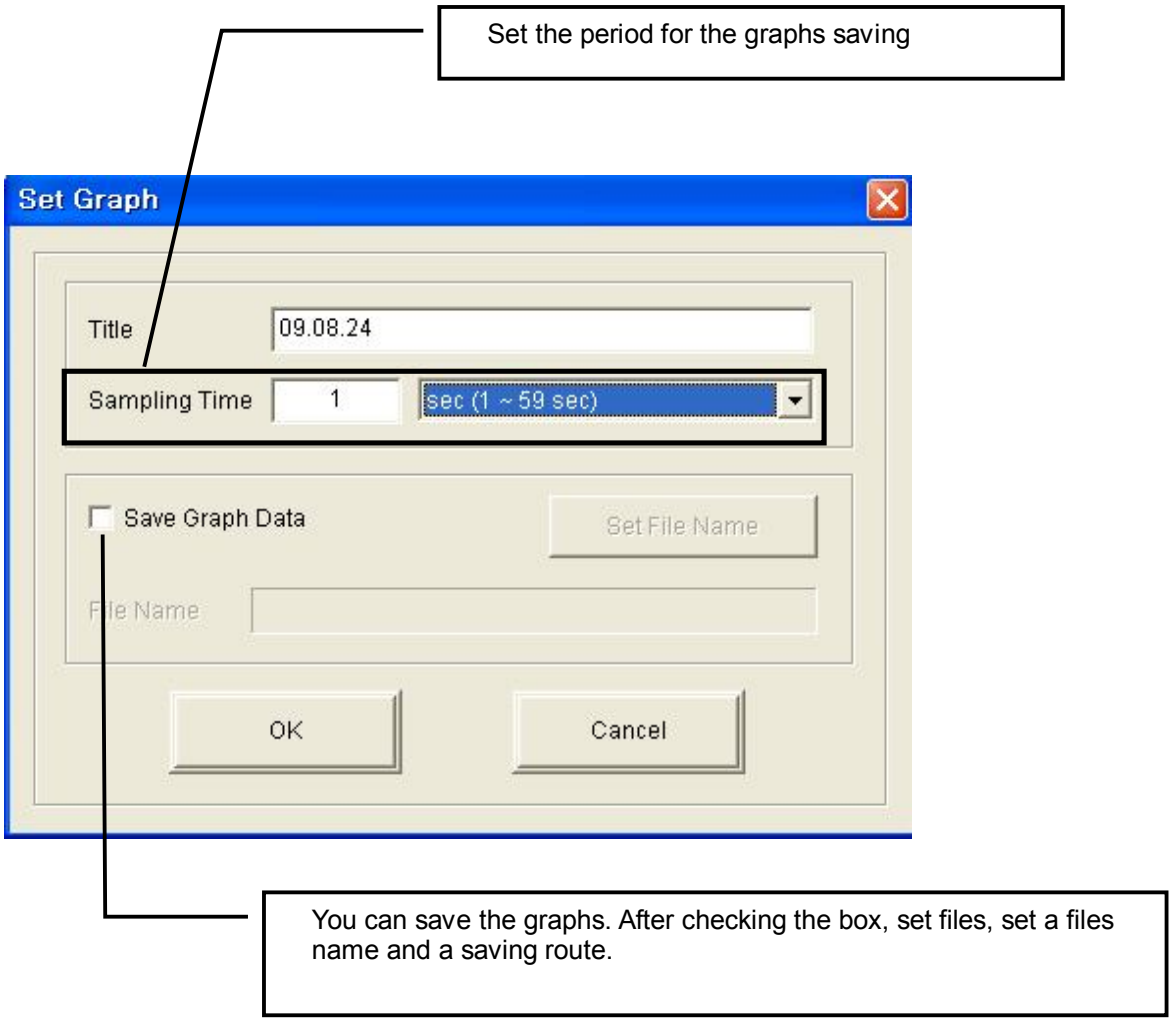
Consist of a condition information display and controlling buttons.



(figure. 2) Separate operating display

Menu -> graph: Set the displaying for graphs for individual units and save it or not
Menu -> test mode: Set the on/off for the separate units operating.

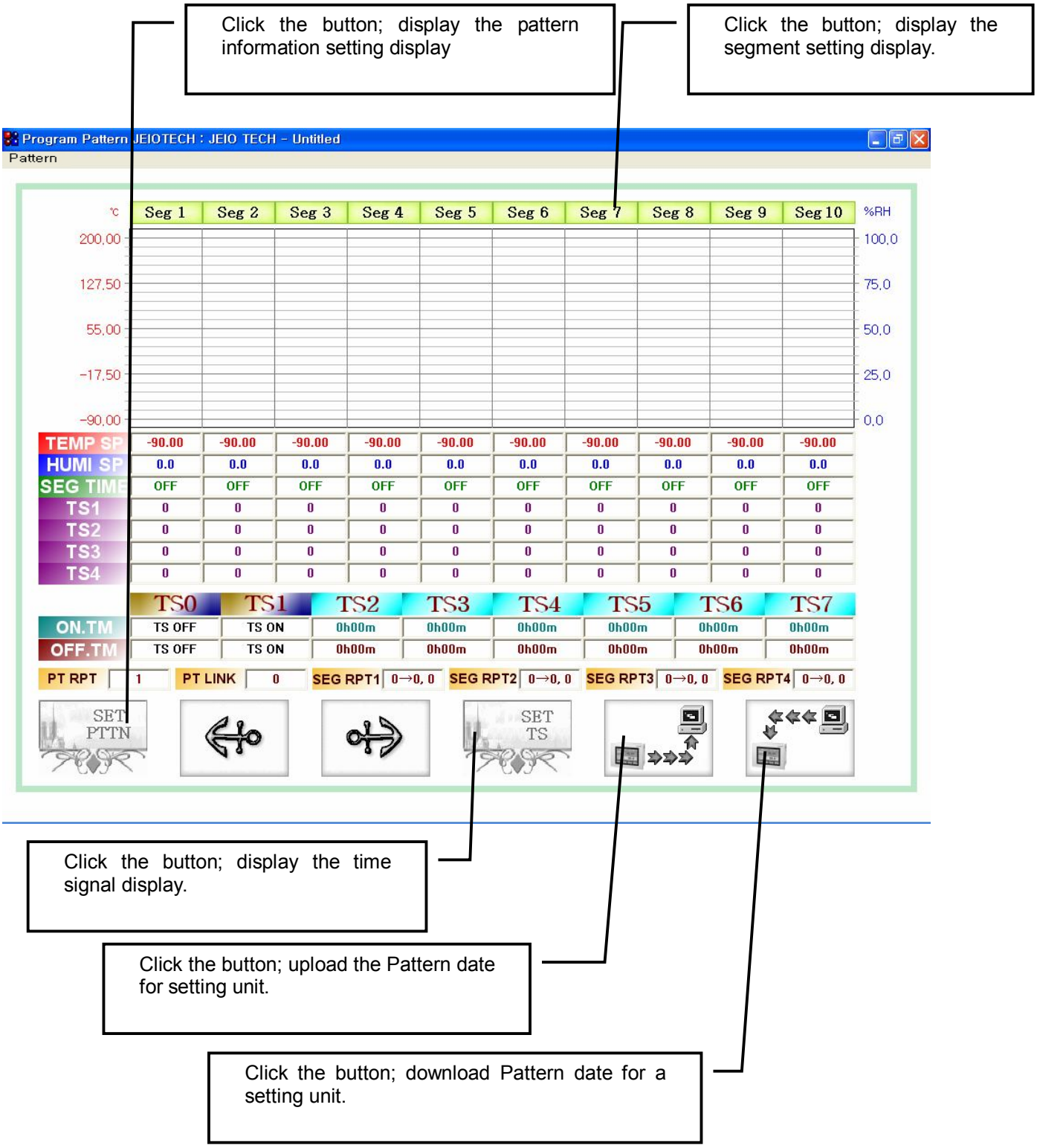
Select the graphs saving or not and test periods on the below graph setting display.



(Figure 3) graph setting display

5.3. Program setting display

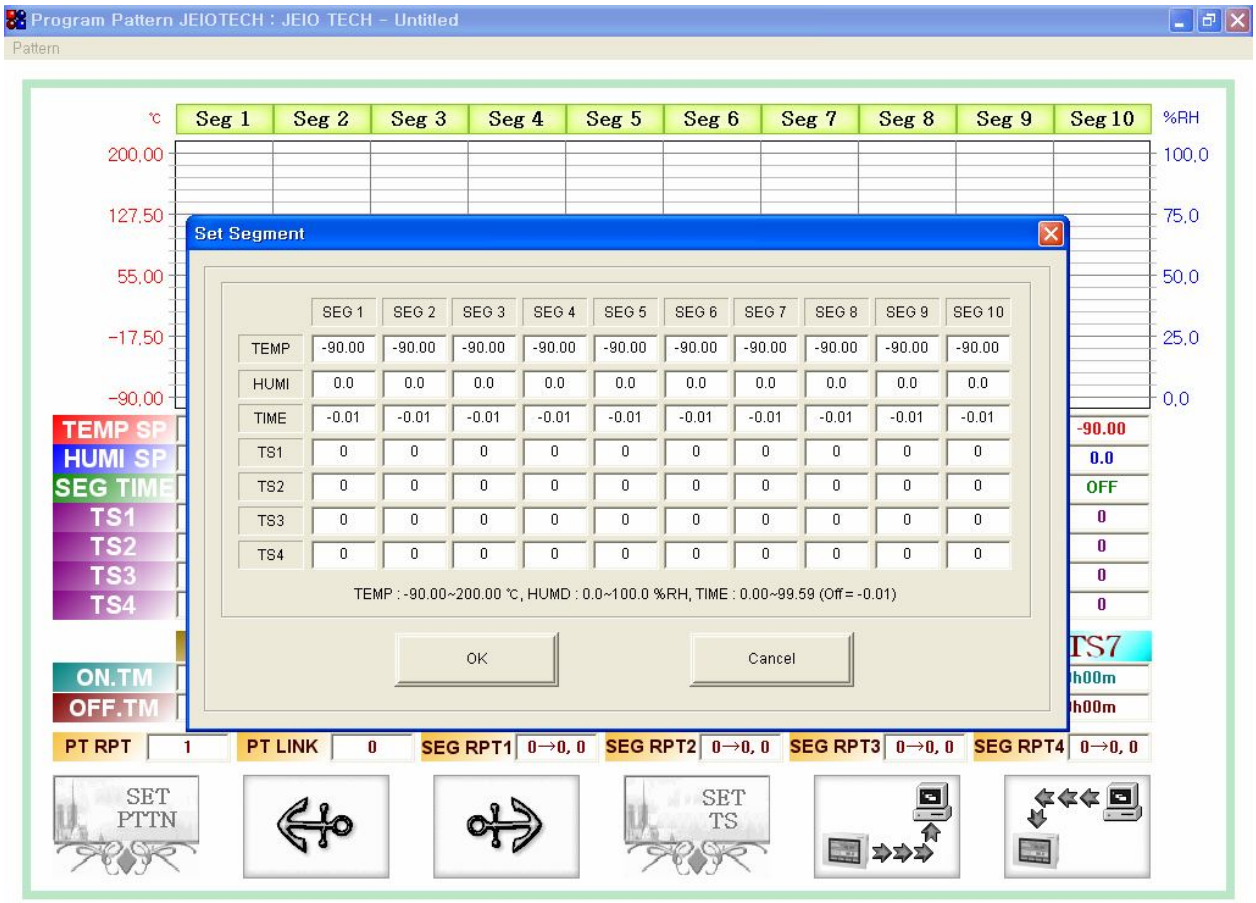
You can up/download programs.



(Figure. 4) Program pattern setting display

You can make out segments for download and confirm the upload date on the below segment setting display.

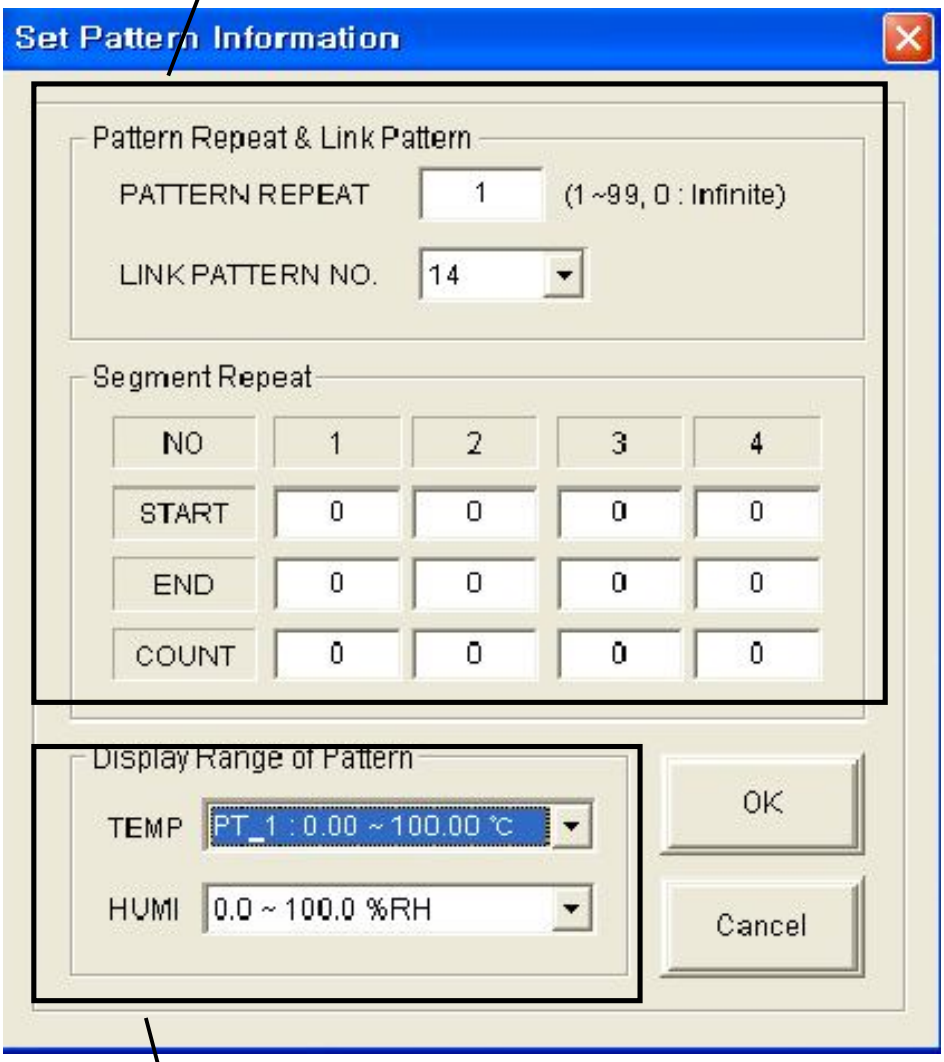
You can set TS (time signal) and WAIT on the below TS & WAIT display.



(Figure 5) Segment setting & TS&WAIT setting display

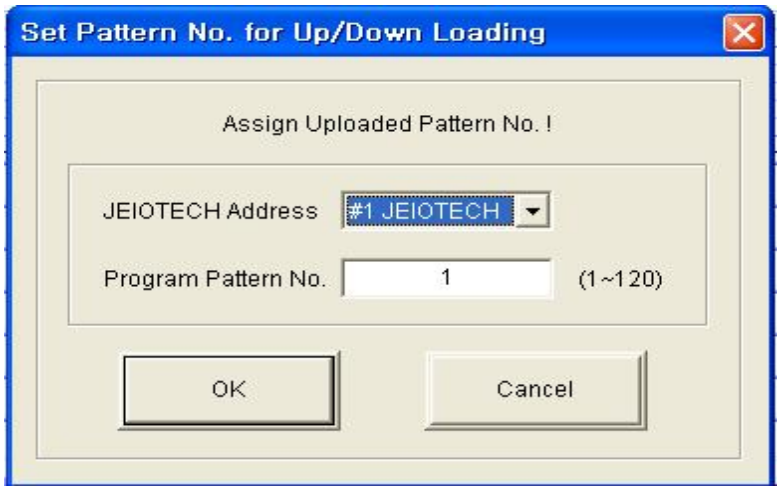
You can set the condition of pattern for download on the below pattern information setting display.

Set the conditions of the repeated pattern operating for download.



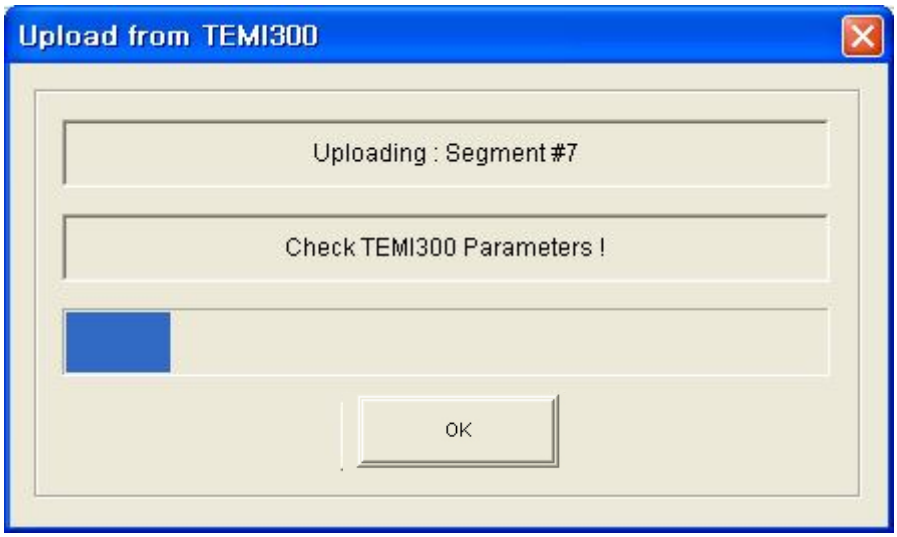
Set the indicating period for pattern graph.

Set a pattern number and a unit for upload.



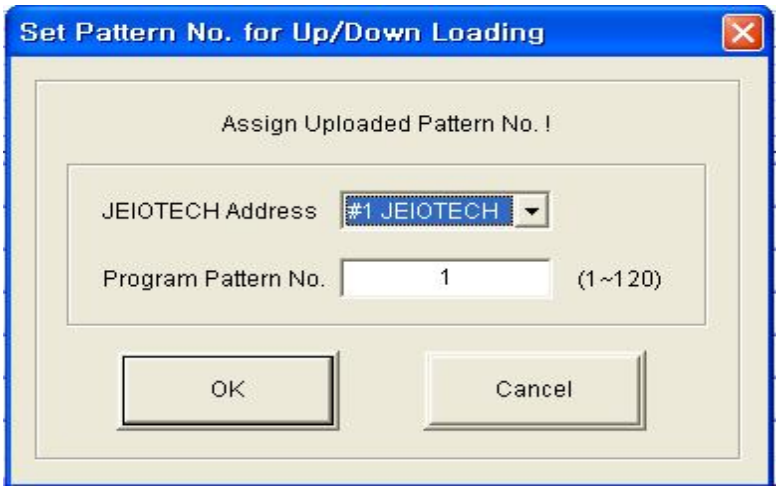
(Figure 7) Upload pattern number setting display.

On uploading the setting pattern to a PC, display the condition as below.



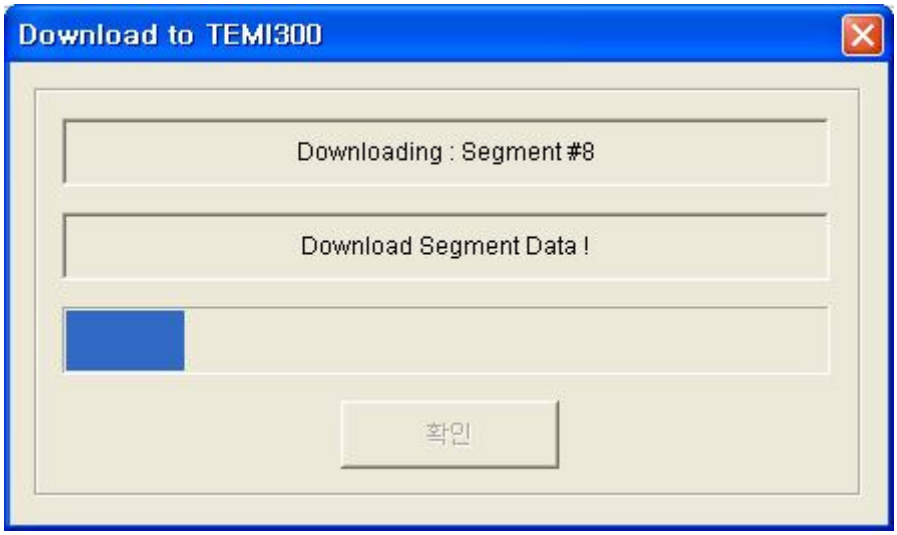
(Figure 8) Uploading display

Set a pattern number and a unit for download



(Figure 9) Download pattern number setting display

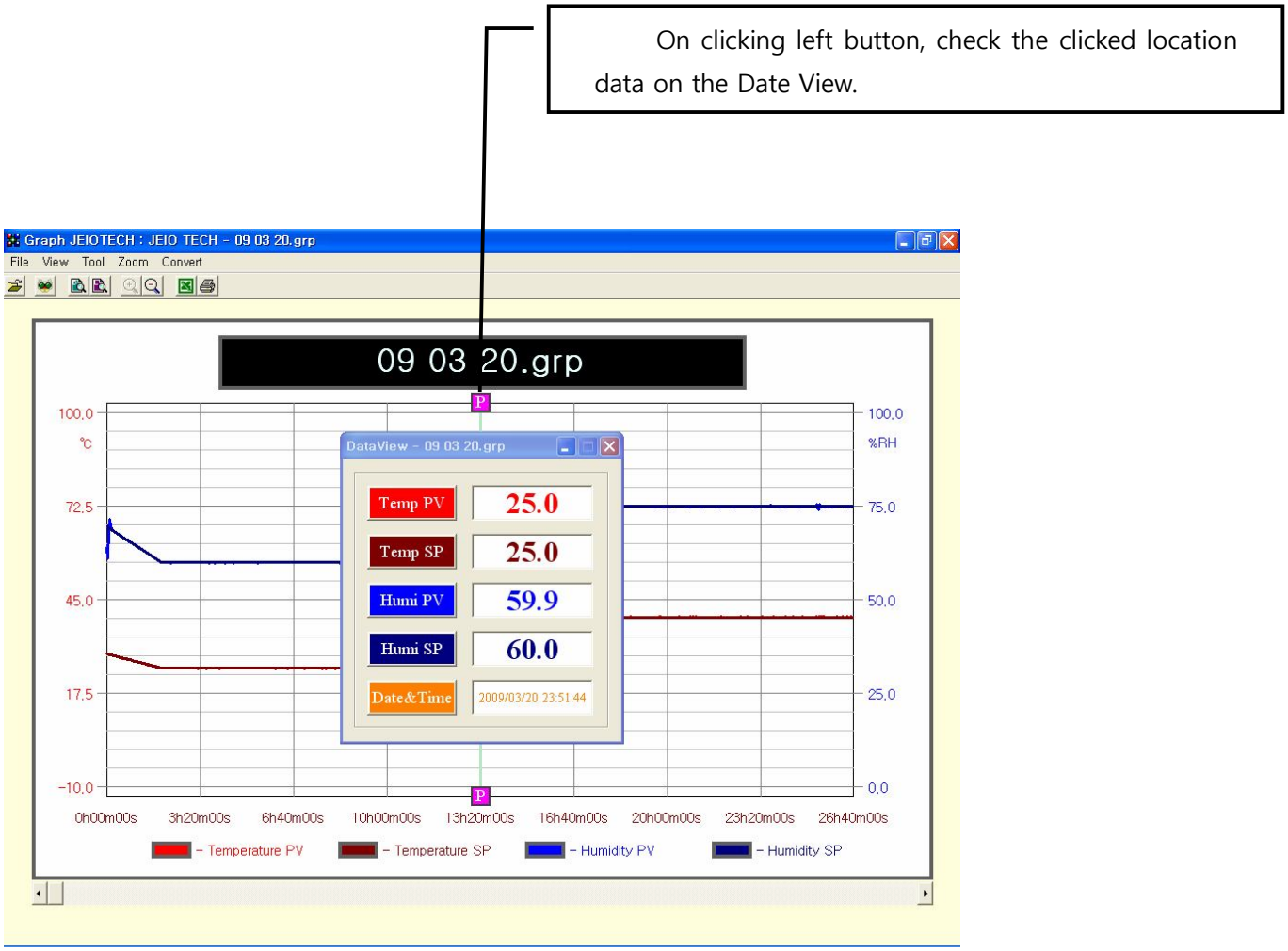
On downloading set pattern to a PC, display the condition as below.



(Figure 10) Downloading display

5.4. Graph display

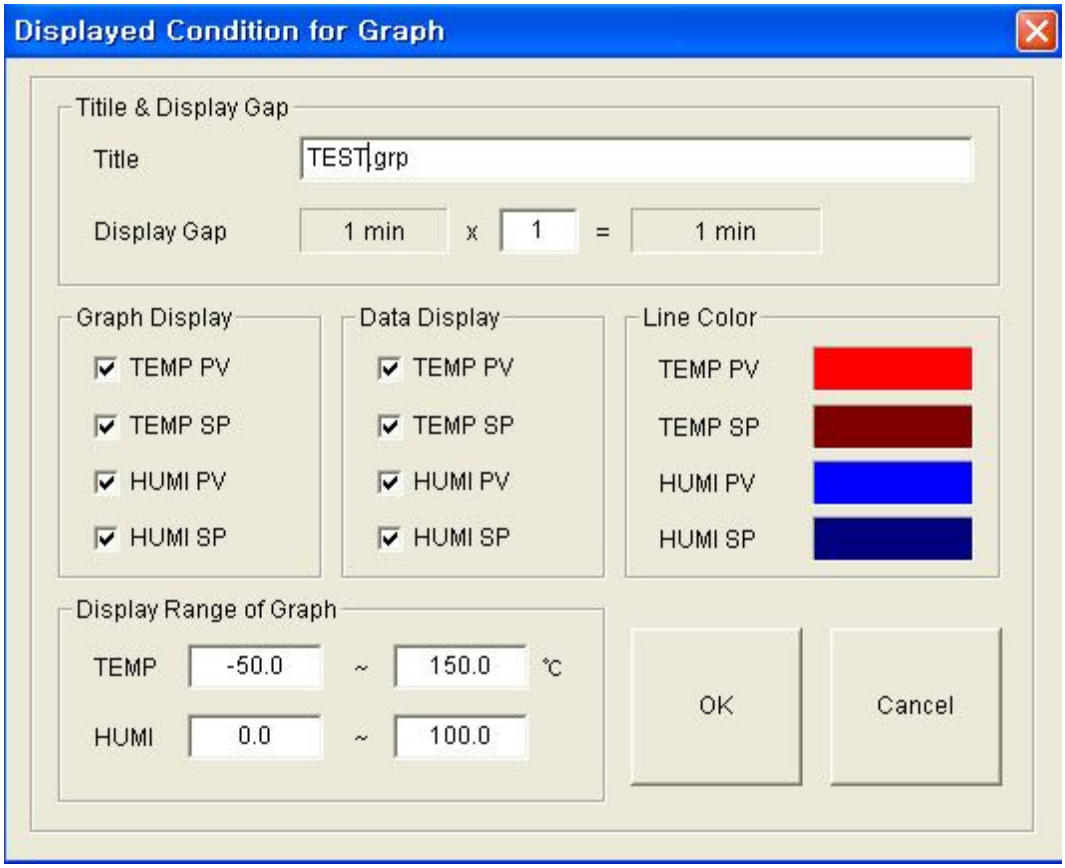
You can convert files and analysis saved graphs.



(Figure 11) Graph display

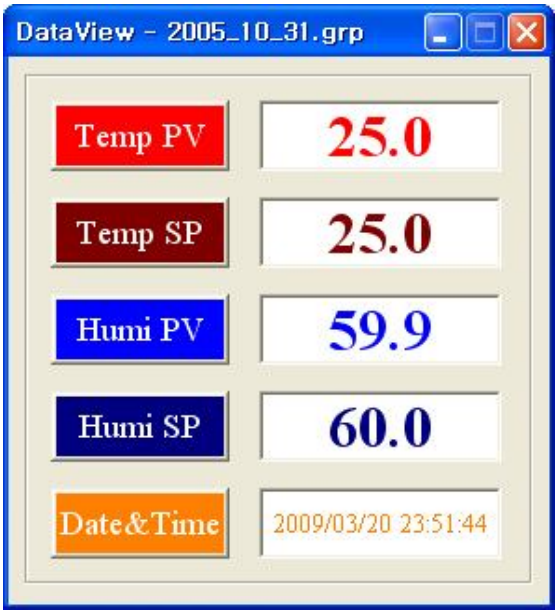
Menu -> file -> open: open the saved graphic date.
Menu -> file -> print: printing current display
Menu -> view -> date view: display the Date View.
Menu -> view -> list view: display the List View.
Menu -> set -> set graph: setting the graph display condition
Menu -> zoom in/out- -> zoom in: zoom in saved graph
Menu -> zoom in/out - -> zoom out: zoom out saved graph
Menu -> convert -> excel file:converting saved graphic date to excel file.

You can set the display condition of graphs on the below graph setting display.



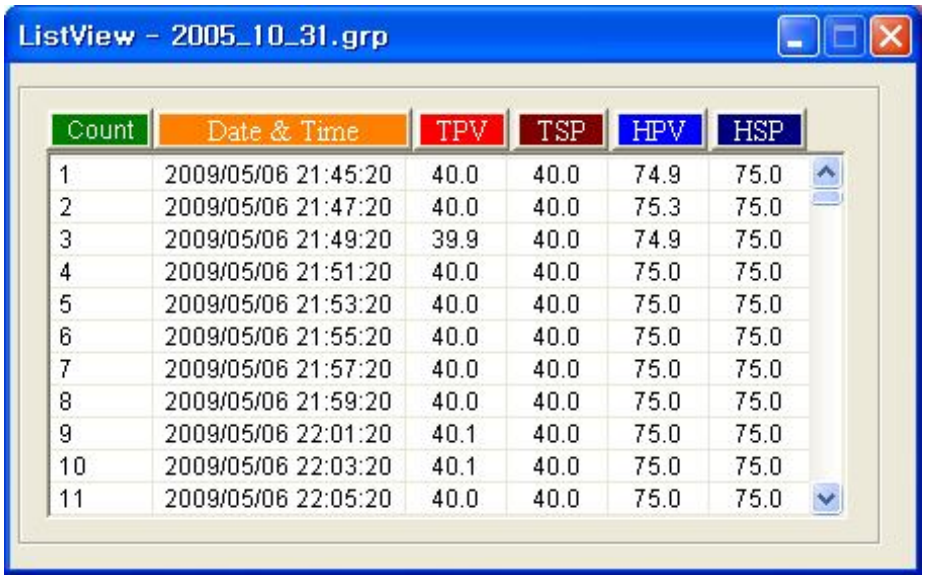
(Figure 12) Graph setting display

You can confirm current PV, SP, Date & Time on the below Date View display



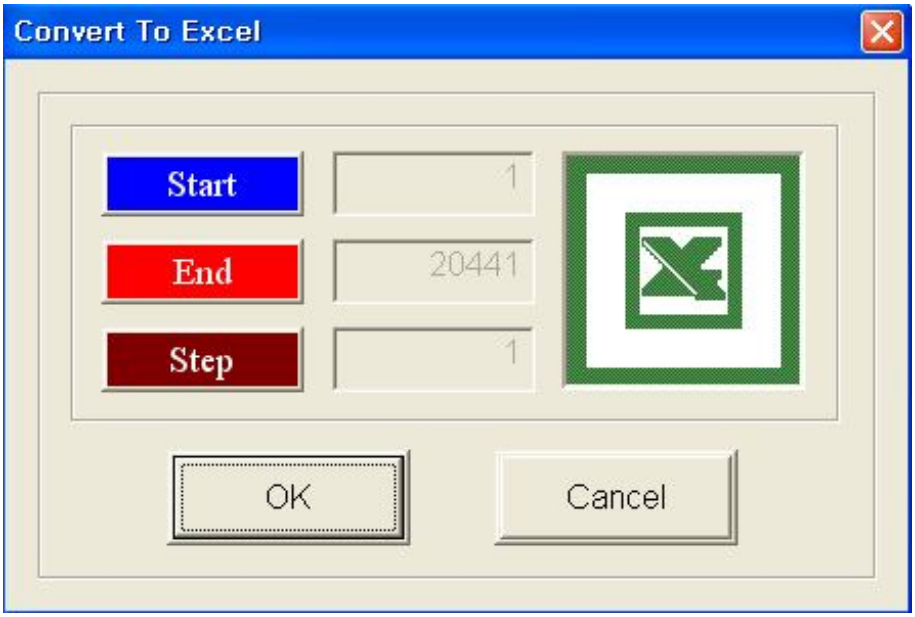
(Figure 13) Date View display

You can confirm total data of opened files on the below List View display.



(Figure 14) List View display

You can convert opened file data to Excel files on the below Excel files creation display.
The converted Excel files will be saved at the same location as the opened file.

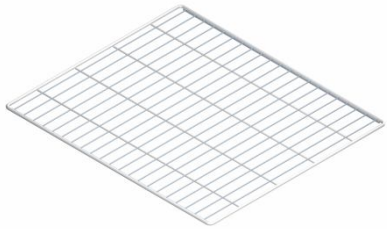
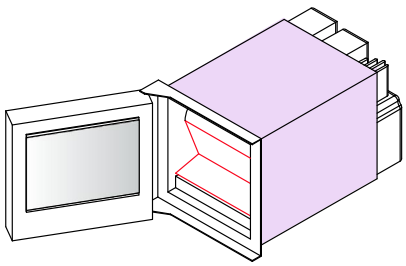
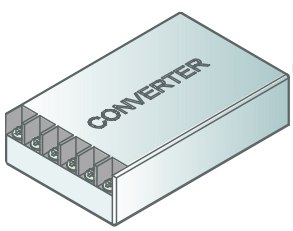


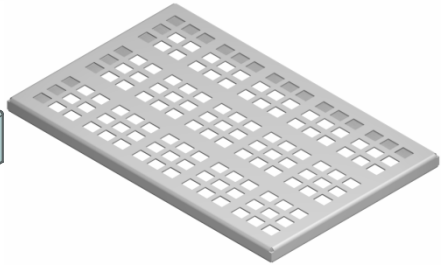
(Figure 15) Excel file creating display

6.0 Accessories

6.1 Accessories & Option lists

Cat. No.	Description	Remark
AAA8T500	Recorder (6 points)	
AAA8T505	Recorder (Digital, 6 channels)	
AAA8T541	Interface converter included a cable (5m)	
AAA8T542	Interface cable (5m)	
AAA80550	Warning signal lamp	
RTD1196	Wire shelf for TH-ICH-300	
RTD1198	Wire shelf for TH-ICH-800	
AAA80604-2	Perforated shelf for TH-ICH-300	
AAA80604-4	Perforated shelf for TH-ICH-800	
AAA8T610	Cable port (Ø 50mm/ 2.0")	
AAA8T611	Cable port (Ø 80mm/ 3.2")	
AAA8T621	Water purifier	
AAA80622	Water cartridge tank	
RTD0794	Humidity sensor	
CFA1910	Temperature sensor (RTD type)	
RTD1190	Fluorescent lamp(Cool white) for TH-ICH-300	
RTD1191	Fluorescent lamp(Cool white) for TH-ICH-800	
RTD1188	UVA Lamp for TH-ICH-300	
RTD1189	UVA Lamp for TH-ICH-800	
AAA80680	THE-680 UV Sensor TH-ICH	
AAA80681	THE-681 Illumination Sensor for TH-ICH	
AAA80661	Door lock device	
AAA80620	Direct water System	



7.0 Appendix

7.1 Technical Specification

Model			TH-ICH-300	TH-ICH-800
Chamber volume			300L	760L
Controller			PID control(LCD Type)	
Temperature[1)]	Range	Without humidity	-5 ~ 85°C without Light	
		With humidity	+0 ~ 85°C with Light	
	Fluctuation[2)]		± 0.3°C at 40°C / 60%RH	± 0.3°C at 40°C / 60%RH
	Variation[2)]		± 0.5°C at 40°C / 60%RH	± 0.7°C at 40°C / 60%RH
Humidity	Range		FULL RANGE : 20~85%RH 40 ~ 80% RH at 15℃ 35 ~ 85% RH at 20℃ 30 ~ 85% RH at 30℃ 20 ~ 85% RH at 40℃~75℃ 20 ~ 85% RH at 85℃	
	Fluctuation[2)]		± 3.0%RH at 60%RH / 40°C	
	Variation[2)]		± 5.0%RH at 60%RH / 40°C	
Light source (ICH Q1B option2)	Cool white [3)]		6000lux	6500lux
	Ultraviolet-A [3)]		4.5W/m^2	5.0W/m^2
	Light Uniformity		VIS.: ±10% UVA : ±15%	VIS.: ±15% UVA : ±15%
Typical Time Required to Reach ICH Recommendation of 200 W-hr/m^2 [4)]			≒ 50Hr	≒ 40Hr
Typical Time Required to Reach ICH Recommendation of 1.2 million lux-hr [4)]			≒ 200Hr	≒ 184Hr
Time	heating [5)]		25min(20℃ →85℃)	30min(20℃ →85℃)
	cooling [5)]		35min(20℃ →-5℃)	40min(20℃ →-5℃)
Refrigeration	System		air-cooled	
	Refrigerant		R-404A	
	Capacity		250W	470W
Cooler			Copper plate fin cooler	
Heater	Material		Ni-Cr Wire Heater / SUS Tube Heater	
	Drying bulb		1500W	2300W
	Humidity bulb		1200W	2000W
Sensor	Temperature		Pt 100	
	Humidity		Electronic sensor(free of drying a wet pack and good response timer)	
Air flow			2 set of sirocco fan(2X60W) : Vertical type	
Material	Internal		SUS #304(2B polish)	
	External		SUS #304(hairline finish) & Steel, 2.0t, Double painted & baked	
	Insulation		Polyurethane(70mm)	
	Door		EPDM Sheet	

Operating temperature		18℃ ~ 30℃, 85%RH(non-corrosive and pure place)	
Water tank	capacity	15L	
	quality	pH6.2 ~ 7.2, Electrical conductivity 20μs/cm to below	
Interface		BASICALLY RS-232C, [RS-485:OPTIONAL]	
Cable Hole		Basically one hole provided/ Ø 50mm (2.0") Optionally max. two holes available/ Ø 50 or 80mm (2.0 or 3.2")	
Dimension	Internal	750X650X650	750X880X1160
(W×D×H,mm)	External	1130X985X1520	1220X1215X1955
Max. Power consumption	AC220V,1ph, 60Hz	15.4A	24.5A
	AC230V,1ph, 50Hz	14.7A	23.5A
Weight(net)		280 ± 10kg	400 ± 10kg

1) All specifications are under ambient temperature 20℃ (68˚F), no load
2) Technical data (according to DIN 12880, IEC 60068)
3) It was measured in the center of front chamber with lamp vertically.
4) ICH guideline (Q1B option2)
5) Up to 98% of the set value
※ Control of Temp. Humidity are comply with ICH guideline Q1A (R2)
※ The Temperature could go up in the condition with defrost, The humidity could be changed as well.
※ Permissible ambient Condition: Temperature 18 to 30℃ (64.4 to 86˚F), Maximum relative humidity 85%
→ Recommended ambient temperature: +20℃(68˚F)

7.2 Warranty

7.2.1 Service under Warranty period

If trouble occurs during product use, user can get free service for 2 year.
Limited warranty from the date of purchase.
During the warranty period, user can get free service like repairing, replacements, refund.

7.2.2 Exceptional cases even during under warranty period.

User can not be credited by warranty in case of as below.

① If trouble occurs by an act of God.
② If the equipment breaks down due to misusing of available voltage.
③ If damage occurs by dropping a product, or impact.
④ If damage occurs in an appearance by organic solvents such as thinner, benzene.
⑤ If damage occurs without following to notice in the manual.
⑥ If damage occurs by fixing the equipment by any person who is not related with Jeio tech.
⑦ If damage occurs by a mistake of a customer.

7.3 Technical assistance

7.3.1. Oversea

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