



# OPERATION MAUNAL

## IL3 series

Model : IL3-15(A) / IL3-25(A)  
Manual No. : 220412L002 Version : 2.3



## **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.

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## **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.

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<http://www.jeiotech.com>

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# 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 of product. Use this manual as a guide and reference for installing, operating, and maintaining your Jeio Tech product. 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 safety chapter guides users to use the product with the best caution to prevent any possible accident. Make sure to read the chapter before use.

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.

The Operation chapter includes a description of controller features, key name, and product operation information.

The Maintenance chapter includes a description of product cleaning, moving, storage.

The Troubleshooting chapter serves as a guide for identification of most common problems. Potential problems are listed, along with possible causes and related solutions.

The accessories chapter includes all the attachable accessories' information.

The software chapter provides information for installing monitoring program, communication protocol.

The Appendix contains technical specifications, warranty and Jeio Tech technical support contact information.

## **1.2 Responsibility**

This unit has been designed to ensure maximum safety of the user, when used under normal conditions and in compliance with instructions during operation.

All users are required to run the device according to this manual. The user of the device should be fully aware of the safety rules marked on the equipment and all the attention • Warning • Risk on the manual should be complied.

### 1.2.1 General Liability

In any case, safety is the first priority. The owner of the machine, user, and/or maintenance personnel must be fully aware of the safety which is the most important part of our everyday business.

If you are concern about the loss in efficiency, remember that accidental impact is always negative for the effectiveness of covering human resources and property.

Effective safety program is the most obvious way of increasing efficiency and productivity.

Ensuring and maintaining the safety of the equipment by checking it daily in addition to the regular maintenance of the unit is a shortcut to improving the productivity.

The users must read this manual describing the functions and safety points of each part as a guided for safe operation.

### 1.2.2 Responsibility of the users

Users are most well- known for the machine's performance and the limit because they are the ones running the machine most of the time.

The safety of the user's maybe be easily be forgotten by the needs of efficiency or familiarity of using the device for a long time.

Precautions with regards to safety in the manual, or by other displayed safety information do not protect the users from injury while they are using the device.

Always read the safety instructions and run the unit safely. In addition, the potential for dangerous situations always should be reported immediately to colleagues and superiors.

#### < Things to read >

- Do not touch any part of the body to the dangerous part of the device.
- Check the voltage, phase and capacity of the power supply and connect properly.
- Do not operate or service, adjust the device until you receive adequate training or are fully aware of the capabilities of the device.
- Remove unnecessary things, sample, or chemicals from this unit.
- When the unit does not operate normally or are neglected from use for a long time check all the settings before operating the equipment.
- Make sure that the unit is operating normally when you move the equipment, or re-use after a long period.
- Stop operating immediately and report to the managers when you find the following states;
  - Unsafe operation and status
  - Shorts
  - Improper maintenance
- When you operating the machine, do not wear loose clothing or jewelry, tie long hair or use hair cap.
- Always keep the equipment clean and peripheral areas, and check if there is a problem with the product or for missing parts.
- When not in use, turn off the power switch or cut off the power to the instrument by disconnecting the power plug.

### 1.2.3 Preventative Maintenance

Proper maintenance is essential for safety. The maintenance personnel must be aware of the importance of safety in maintenance of the equipment for effectiveness of the unit.

Before removing or adjusting parts of the device, shut off all the electrical supply, remove accessories. The unit must display a warning that it is working.

Please ensure that the device is properly connected to a grounded outlet.  
After repair and maintenance, check the work performed and clean tools.

Do not apply the power to the unit until all workers clean the area. The device must be checked if there are no problems with the unit before operating the machine.

## 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.



Indicates a hazardous situation which, if not avoided, will result in death or serious injury



Indicates a hazardous situation which, if not avoided, could result in death or serious injury.



Indicates a hazardous situation which, if not avoided, may result in minor or moderate injury



Indicates a property damage message.

### 1.3.2 Safety symbols

#### Mandatory



Read Manual.



Wear gloves.



Wear a face mask.



Wear eye protection.

#### Prohibition



No direct sunlight.



No high frequency noise.



No corrosive fluids or cleaners.



No water.

## Warning



Foot crush.



Hand crush or pinch.



Lifting hazard.



Do not take the device apart deliberately.



Electrical shock.



Flammable or fire could be caused.



Sharp points.



Hot surface.



Safety Alert Symbol  
General caution.



Crush hazard.

### 1.3.3 Non-safety symbols

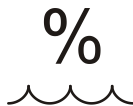
The following graphic representations are intended to convey a message without words or to bring your attention to important information about the use of the Product or a feature.



Permissible ambient  
temperature



Altitude



Relative humidity



Earth Ground

## 1.4 Where to Locate Safety Labels on product.

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

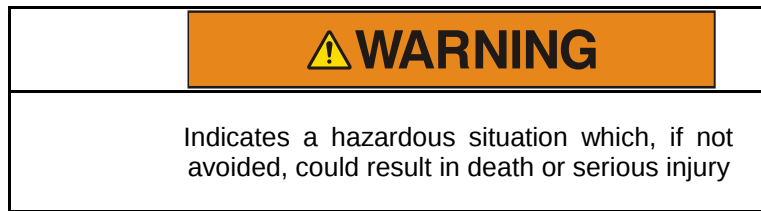
The following illustrations show where the safety labels should be attached to the product until service of the product is discontinued. If the safety labels are damaged, please contact your local Jeio Tech office or distributor to request new labels.

## 1.5 Precautions for your product

Our product 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 product, 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.

Power supply must be properly grounded.

: Abnormal grounded connection causes serious damage. Grounded connection must not be on the water pipe and gas pipe.

Do not insert multiple plugs into the outlet at the same time.

: In case of over current, possible to cable burning, product damage, and fire.

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 product during operation.

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

Do not install the product near environments where flammable gas may leak.

Do not use the machine at places where moisture is high and flooding can be happened.

Do not install the product near gas pipe or water pipe.

Do not use the machine near environments where explosion can occur due to organic evaporating gases.

DO NOT use product in environments that contain industrial oil smoke and metallic dust.

Do not install the oven near high- frequency machine. (High-frequency welder, High-frequency sewing machine, large capacity SCR control)

Do not put explosive and flammable chemicals (Alcohol, Benzene, and etc.) into the chamber.

Do not put any liquid container on product. In case of liquid leaking, the liquid is caused product damage.

Do not expose the product to direct sunlight

Do not expose the product to direct heat sources.

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

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

DO NOT operate damaged or leaking unit.

DO NOT disassemble, fix or change the Product other than for those items described in this operating manual.

In case of inner electronic components service, only the person who is qualified can handle the problem.



#### 1.5.2 Caution statement

|                                                                                                    |  |
|----------------------------------------------------------------------------------------------------|--|
|  <b>CAUTION</b> |  |
| Indicates a hazardous situation which, if not avoided, may result in minor or moderate injury.     |  |

Please install on the sturdy surface laboratory which is set safety facility and make sure horizontal align correctly.

Do not let the product take any strong shock or vibration.

Caution that the artificial heart pulsars, magnetic data devices, or magnet bar are possible to affect the product operating.

Do not move the product by holding the door.

DO NOT operate product and immediately disconnect the main power supply and request service when water may be in the unit.

After use, be sure to turn off the main power switch and unplug the power cord after.

Do not put heavy things on the power line. Do not put the machine on the line.

Installation power outlet near instrument and may be convenient.

Do not sprinkle insecticide or flammable spray on the product.

Please power off while product cleaning.

Do not pour water directly on the outside of product.

Do not clean product by solvent and harsh detergents, please use neutral detergent and smooth cloths.

Do not inject any flammable objects, and conductive objects outside of product hole or vent.

Wear safety gloves and be careful burn from the residual heat from the product.

Do not install near other laboratory instrument, electrical devices, or power terminal.

In case of inner electronic components service, only the person who is qualified can handle the problem.



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.

## 2.0 Functional Description

## 2.1 Introductions

This equipment is a multi-purpose low temperature incubator for biotechnology, pharmacy, medical science, chemistry, and biology. It has applied CLS (Custom Logical Safe) – Control System that Jeio Tech originally developed for the convenience in use and the s

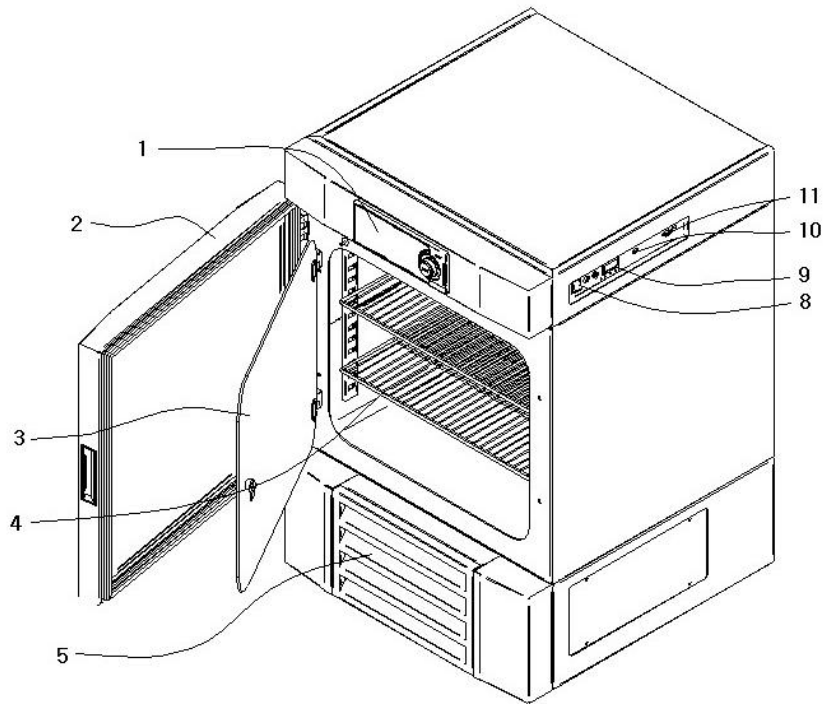
## 2.2 Features

- 1) CLS-Control system<sup>1</sup> means “Control system which has logical safety device specialized for individual model”. Laboratory must have Thermal safety secure because there are a lot of inflammable reagent. This system is highest safety secure control device and makes the unit suitable for this kind of environment.
- (2) CLS-Control System carries out temperature control of equipment and heating control in the Main CPU where precise PID algorithm is possible. All actions for safety are conducted by a selective functional Logic IC which is installed separately. This is designed to conduct safety performance against any electric and electronic shock on the unit.
- (3) CLS-Control System shuts down all 2 phase power supply to each part immediately and informs user instability by audible and visual device, and then it keeps in safety mode until all instability conditions are removed.
- (4) CLS-Control System gives user two choices when the unit's operation is terminated by a power failure and then the power recovers. One is a resume of the unit's operation. Another one is to keep the unit in standstill.
- (5) CLS-Control System is composed that feeble electric current streams down to only 5V, 10mA at a point of contact of a used safety device. There is no damage of a point of contact in use of a long time. So, the durability is very long. After it stops the control of the Thyristor which controls electric current stream of the heater that uses a large electric current when a safety device is operated, it shuts down the power through Magnet Switch's disconnection of a point of contact. It prevents the point of contact from damaging and a noise revelation of a power switch. It enforced with the mentioned objection order above when an operation of equipment starts, and it also prevents the point of contact from damaging and a noise revelation of Magnet Switch.

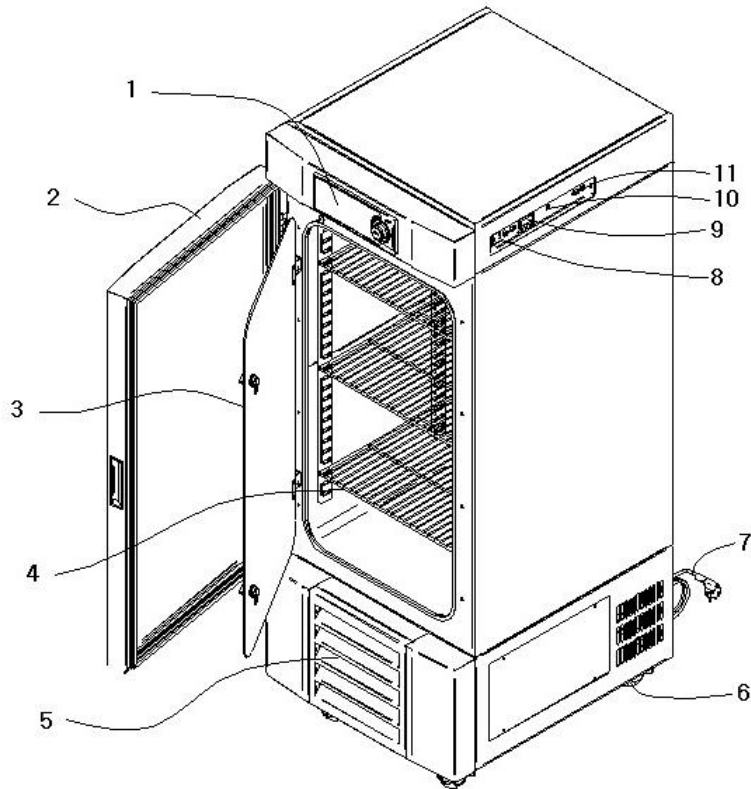
---

<sup>1</sup> Control system which has logical safety device specialized for individual model

2.3 Structure



[ IL3-15 ]



[ IL3-25 ]

(1) Temperature Controller

This has a micro processor (CPU) which has a digital PID auto tuning function. It also has the highest level of safety control system such as a temperature compensational function for temperature sensor and a heating volume controller.

(2) Door

For using a silicone heater near door, we removed dewdrops on the surface of the door.

(3) Inner Door

User can be observing sample without inner temperature change by inner door which is made tempered glass.

(4) Shelf

It's made of stainless-steel wire. It's easy to clean, and ventilation is good. The surface is electrically polished therefore it has a beautiful view and a good anti-corrosion.

(5) Condenser Intake

This is condenser air inlet for refrigeration system.

(6) Caster (Foot)

High-class caster stops movement and rotation when the break function works.  
-15 model is Foot type, 25 model is Caster type.

(7) Main power cord

It is a cord that supplies the main power.

(8) Power Switch

This is a switch for main power.

(9) Temp.Limit-Electronic Type

Electronic thermal overload protection device.

(10)Temp.Limit-Mechanical Type

Mechanical thermal overload protection device.

(11)Communication port

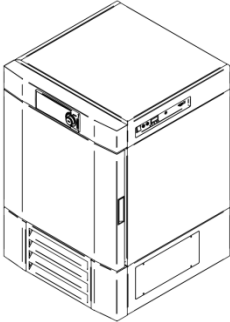
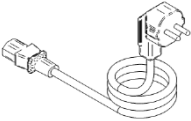
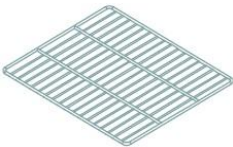
Connect to PC with COM1 or Com2 port. Exclusive program (which is using RS-232C protocol) can be monitoring and change the setting. Data can be saved and printed as well.

## 3.0 Installation

### 3.1 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.

| Item                           | Figure                                                                              | Quantity | Etc. |
|--------------------------------|-------------------------------------------------------------------------------------|----------|------|
| Unit                           |    | 1        | -    |
| Operating & Instruction manual |   | 1        | -    |
| Main Code                      |  | 1        | -    |
| Shelf                          |  | 2~3      |      |

## 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.



Keep product 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).



Please keep Ambient temperature 5°C~40°C



Relative humidity not to exceed 80%



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



Check a ground wire of the unit.

## 3.3 Preparing before installation

- (1) This product is designed to operate normally on specified power source.

Before installing the product, make sure the supplying power is matched the using power. (refer. ID plate which is located product back side)

The power source must be a grounded more than grand 2. Also the power code must be have ground terminal this product is designed to operate normally on specified power source. Before installing the product, make sure the supplying power to match using power. (refer. ID plate which is located product back side)

- (2) When you transport the product, should be using correct tool and more than one person.
- (3) The outlet should be installed near the product to use easily.
- (4) Install the product on the flat, level surface which is no vibration and shock-free place.

(5) Please avoid from heat sources and direct sunlight, installed Temperature and humidity condition: 18°C ~ 25°C, below 80%RH condition.

(6) The product should be avoided to use near organic solvents such as Acetone, Methylene Chloride, etc. also do not use near strong and high frequency noise place.

(7) Do not allow any moisture, organic solvents, dust, or corrosive gases to enter the control box of the unit.

---

 **WARNING**

- Check to make sure that the correct line voltage, phase and capacity correspond to them specified on the identification plate.
  - Make sure your earth connection is duly executed
- 

### 3.4 Power Supply

Required voltage and current capacity is written on the ID Label of IL3 Series. The user have to check the required specification of electricity in the ID Label before connecting the power. It is possible to use the voltage  $\pm 10\%$  of written specification in the ID Label.

After checking the required power, Please check your suitable electric outlet. Electric outlet should be used only for the unit certificated. If you have wrong cord for the unit, please contact to the manufacturer or reseller.

In case of the power code is short for the installation, the user can use the extension code which certificated standard in IEC60320.

Please follow below process to connect the power.

**Step 1:** Please check the required voltage and current capacity for the product. (ID Label)

**Step 2:** Please check the suitable socket and plug at the install location.

**Step 3:** Please check if the length of cord is sufficient for installation to choose the suitable install location.

**Step 4:** Please check the cord which connected with the unit. Please Put the switch off before the power is supplied.

**Step 5:** Connect the Power cord to the outlet.

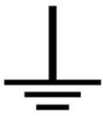
Don't damage the ID Label as whole information of the unit is written on it. Please refer to the ID Label when the unit has problem, inquiry for consumables for the unit or the service inquiry.

---

## **WARNING**



Electrical  
Shock  
Hazard.



- Check the voltage, Phase, current capacity exactly to connect the power properly.
  - Inappropriate connection of power can occur damage of the unit and serious injury to the user.
  - Do not touch or deal with the electric parts and cord with wet hand.
  - Use the power with grounded.
- 

## 3.5 Operation

### 3.5.1 Confirmation in advance

- (1) Check the connection between the unit and electric outlet.
- (2) Check if the unit located at a level with the ground.
- (3) Check if the each accessory is attached on the unit properly.
- (4) Check if there is any flammable or explosive material inside of the unit.

### 3.5.2 End operation of the equipment

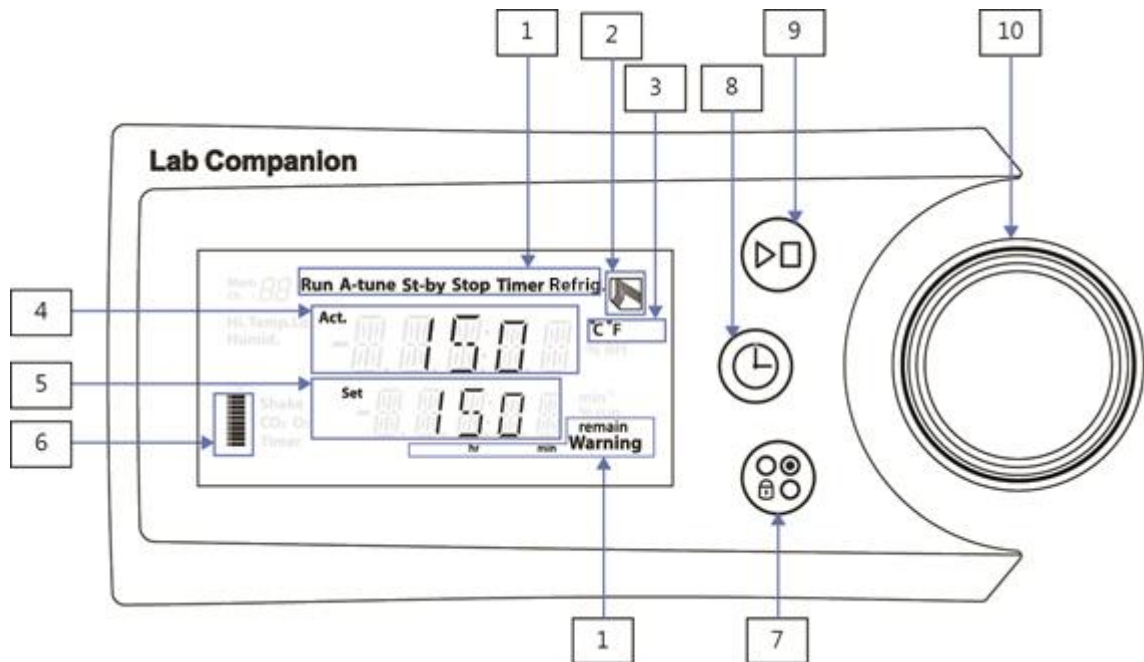
Turn off the unit when you don't operate it.

In case you don't operate the unit for long time, disconnect the plug from the socket.

## 4.0 Operation

## 4.1 Function of control panel

The control panel is made up with VFD, Dial Knob, and Membrane button.

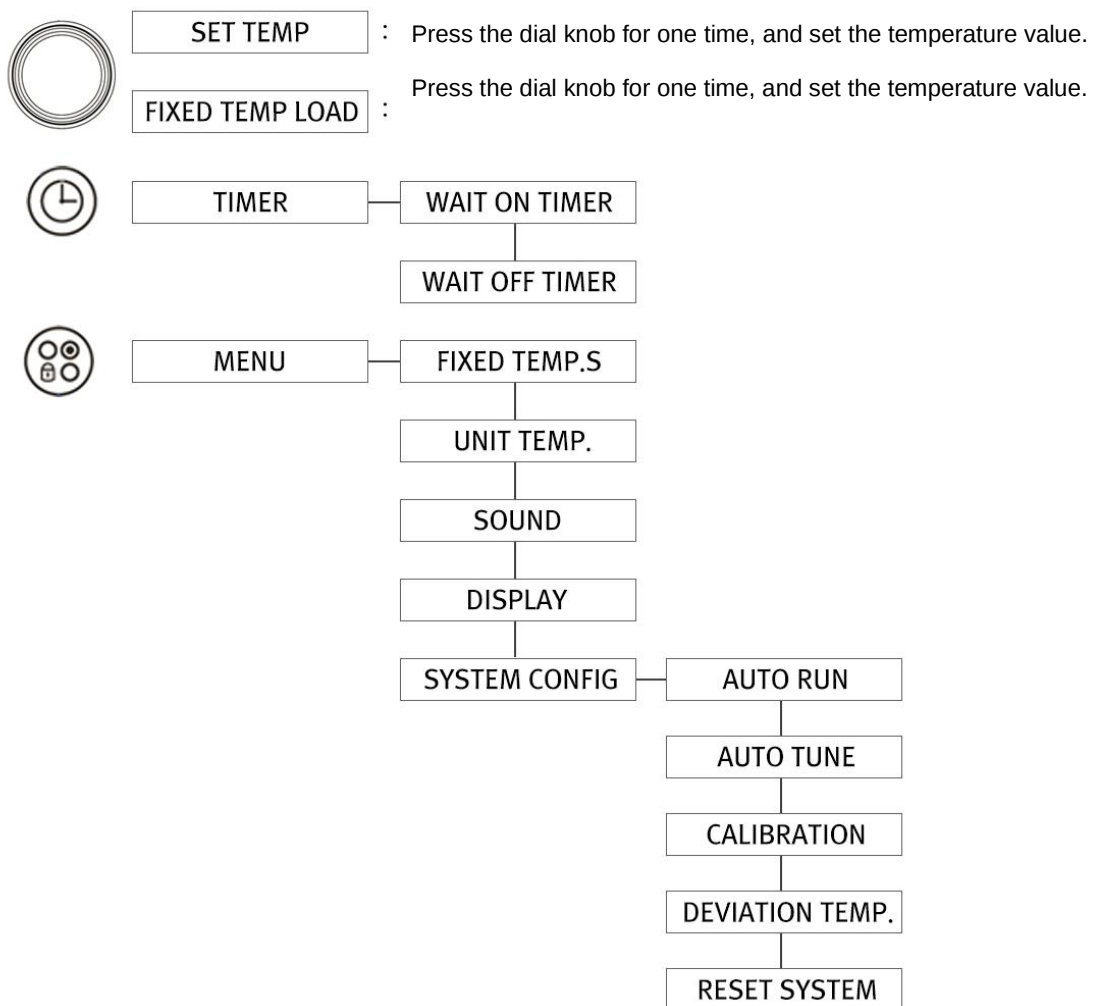


|   |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|---|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Status Display      | Display the status of the unit. <ul style="list-style-type: none"> <li>• Run: The unit is running</li> <li>• A-tune: The unit is on the Auto-tuning.</li> <li>• St-by: Stand-by status/ON Timer is on.</li> <li>• Stop: the unit has stopped.</li> <li>• Timer: Timer function</li> <li>• Refrig: Status of cooling system.</li> <li>• Warning: Warning</li> <li>• hr/min: hour / minute</li> <li>• remain: remain time when the timer is on.</li> </ul> |
| 2 | Logo(Lab Companion) | JT logo image, flashes when the computer connected.                                                                                                                                                                                                                                                                                                                                                                                                      |
| 3 | °C, °F              | Temperature measurements.                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 4 | Actual Display      | Displays unit's actual temperature value.                                                                                                                                                                                                                                                                                                                                                                                                                |
| 5 | Set Display         | Displays setting temperature value.                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 6 | Heating Rate        | Displays heater's output.                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 7 | Menu Button         | <ul style="list-style-type: none"> <li>* Configuration for the unit with the button.</li> <li>* Put the button to cancel the operation while the configuration setting.</li> <li>* When you push the button for 3seconds, you can lock/uplock the controller.</li> </ul>                                                                                                                                                                                 |
| 8 | Timer Button        | Timer setting.                                                                                                                                                                                                                                                                                                                                                                                                                                           |

|    |                   |                                                                                                                                                                                                                                                                                                                                                                   |
|----|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9  | Start/Stop Button | Run/Stop the unit.                                                                                                                                                                                                                                                                                                                                                |
| 10 | Dial Knob         | <ul style="list-style-type: none"> <li>* Wheel the knob to set the value.</li> <li>* You can check the temperature, setting point and remain time with wheeling the knob.</li> <li>* Wheel the Knob to select the configuration.</li> </ul> Push the Knob to go to the selected menu.<br>* Push the Knob for long time to bring the saved set temperature values. |

## 4.2 Control structure

The main structure of the unit is as below.



## 4.3 Basic operation

### 4.3.1 Operation

Turn on the switch located in right below of control panel.

VFD will be on with “JEIOTECH” and Main screen will be displayed.

### 4.3.2 Temperature control

#### 4.3.2.1 Start to temperature control

When you push Start/Stop button to control the temperature when the status of Run refer to Starting temperature control.4.3.1

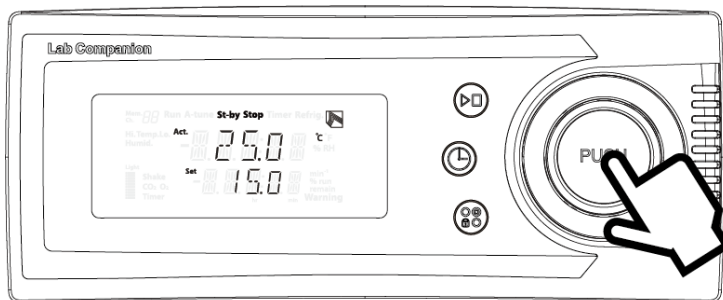
#### 4.3.2.2 Stop to temperature control

Push Start/Stop button to turn on/off the unit.

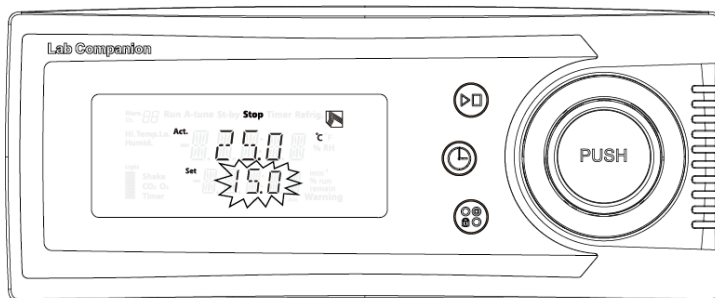
#### 4.3.2.3 Set temperature and change

Generally, all set temperature and change as below;

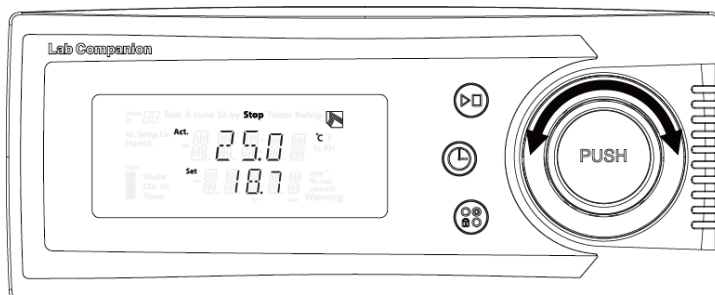
(1) Push the Dial Knob(Knob) once.



(1) The setting value will be blinking.



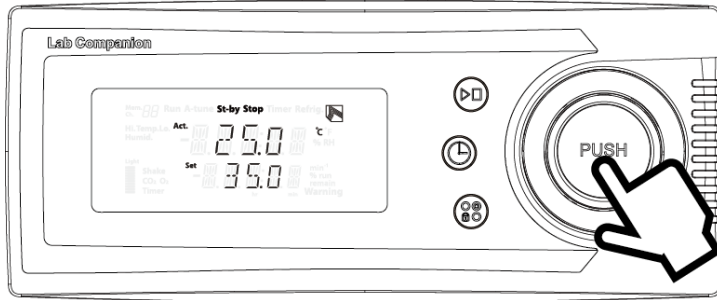
(2) Wheel the Knob to change the setting value.



If no input in the knob for 3seconds, the value will blink again.

If no input in the knob for 20seconds, the setting will be canceled.

(3) Push the Knob to save the adjusted setting.



※ In case of Timer setting, the procedure is the same as above.

※ In case of Menu configuration, Push Menu button while selecting the setting and change the setting as above.

※ Fixed Temp Load Function: Push Dial Knob for 3seconds, you can bring the fixed temperature set.

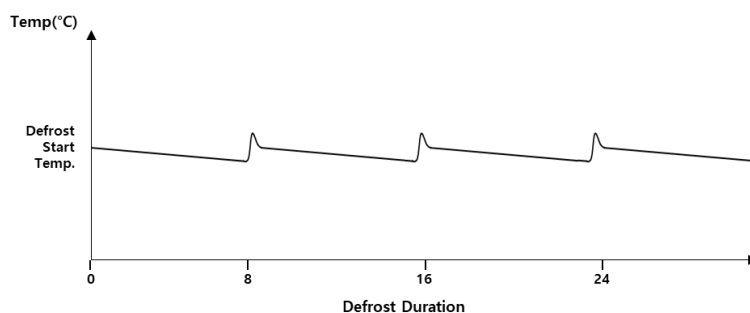
## NOTICE

When you need to cancel the setting while you are in configuration, press MENU button to cancel. (Press TIMER button in case of Timer setting.)

When you press MENU button you can go back to previous step and you will go back to main 설 display when you are in MENU select display.

### 4.3.2.4 Automatic defrosting

To prevent the condenser from freezing, IL3 series automatically performs defrosting every 8 hours when the temperature is set below a certain 40°C. During the defrosting, the temperature inside the chamber may rise slightly.



### 4.3.3 Controller Lock

When the unit is running, Press the MENU button for 3seconds to activate/deactivate controller lock.

When the Controller Lock is activated, you cannot use whole buttons on the controller except for RUN/STOP button.

## 4.4 TIMER Function

There are 2 kinds of TIMER function in the unit.

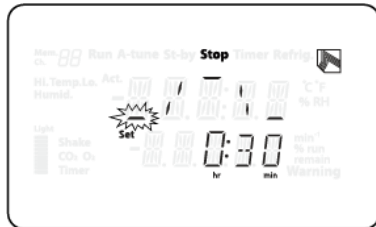
Wait On Timer: After setting time passed, the unit starts running.

Wait Off Timer: After setting time passed, the unit stops running.

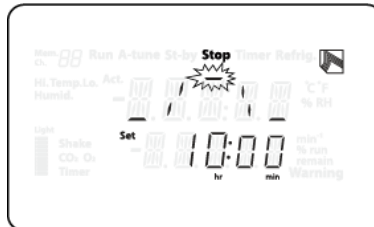
Press TIMER button to enter timer setting menu. When the timer is set, "TIMER" is displayed on the left below side of VFD. You can adjust the timer max. to 999h 59m.

### 4.4.1 TIMER ON setting

- (1) Press TIMER button once. you can see the current TIMER setting.
- (2) Wheel the Knob to select the timer type (Wait on, Wait off) and press the knob to enter the setting menu.



[Wait On Timer]



[Wait Off Timer]

- (3) Wheel the Knob to the left to select TIMER SET and press the knob. The hour value will be blinking.
- (4) Adjust the hour value and press the knob. The minute value will be blinking.
- (5) Adjust the minute value and press the knob.

Press the TIMER button or select the ESC and press the knob to go back to the main display

※ When the unit is running, you can adjust only TIME OFF setting.

## NOTICE

When the adjust the minute value, if you cancel the setting, the hour value that set from the previous step will be canceled together.

When you change the set time value while the timer is running, the existing set timer will be changed. The unit will calculate and decide the time between the already passed time and new set time. If you need to adjust new timer, not the changing the existing setting, you need to off the timer or stop the unit and adjust the setting again

### 4.4.2 TIMER OFF Setting

- (1) Press the TIMER button once. the current TIMER setting will be displayed.
- (2) Press the Knob to enter TIMER setting.
- (3) Select "TIMER OFF" and press the Knob
- (4) Press the TIMER button or select "ESC" and press the knob to go back to the Main display.

### 4.4.3 Terminate TIMER

- (1) When the Wait On timer is terminated, Sound alarm occurs.
- (2) When the Wait Off timer is terminated, the unit stops, sound alarm occurs and "TIMER END" displays.
- (3) Press the Knob to go back to Main display.

## 4.5 Configuration

Adjust the configuration of the unit.

Press MENU button and the menu below will be displayed.

|   |                      |                                                                                                                                                                                                                                                                                                                            |
|---|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Fixed Temp Set       | You can register 3 sets of fixed temp. set.<br>You can bring the setting pressing the Knob for 3seconds.                                                                                                                                                                                                                   |
| 2 | Unit Temp.           | You can choose the temp. measurement.(C, F)                                                                                                                                                                                                                                                                                |
| 3 | Sound                | You can on and off the beep sound of the system.                                                                                                                                                                                                                                                                           |
| 4 | Display              | You can choose the status of the display when you wheel the knob while the unit is running. <ul style="list-style-type: none"><li>• <b>Return:</b> Go back to previous display after 3seconds.</li><li>• <b>Fix:</b> Fix the moved display.</li><li>• <b>Auto:</b> Lotate 2 displays alternatively for 3seconds.</li></ul> |
| 5 | System Configuration | You can adjust the configuration regarding the system.<br>(It is not displayed when the unit is running.)                                                                                                                                                                                                                  |

## 4.6 System Configuration

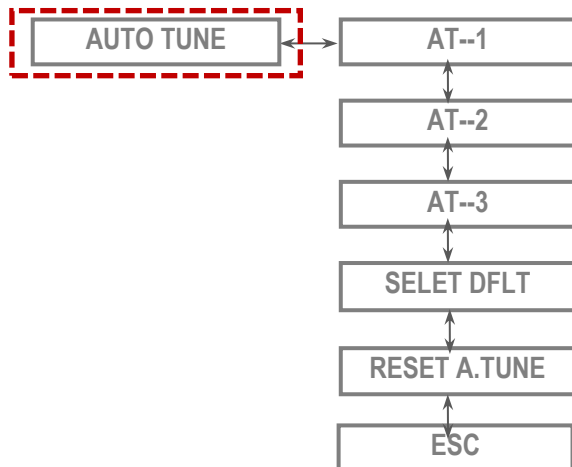
You can set the variables for the machine operation. Please be fully aware of the manual before you change System Configuration. When the machine is not in the operation, you can do setting by pressing MENU button and selecting CONF. SET – SYSTM CONF.

|   |                  |                                                                                                                                                                                                                                                                           |
|---|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Auto Run         | The user can choose activation of the Automatic run after power interruption.<br>After power interruption and power restoration during the operation, it restores the operation status before the power interruption (Time information is not able to be restored)        |
| 2 | Auto Tune        | The function updates PID parameters for temp. control. With this Auto Tune function, the user can do optimum temperature control for the temperature mainly used.                                                                                                         |
| 3 | Temp Calibration | It is to calibrate the value read by temp. sensor in the machine and user's reference measurement equipment.<br>User can calibrate 3 temperature points with the reference measurement equipment.                                                                         |
| 4 | Temp Deviation   | Set Time delay and tolerance between set value and actual value. <ul style="list-style-type: none"><li>• Temperature setting : Deviation Limit setting</li><li>• Alarm Delay: when temperature deviation exceeds Deviation error for more than set period time.</li></ul> |
| 5 | Reset System     | Initialize the modified figure to configuration to factory initial value.                                                                                                                                                                                                 |

### 4.6.1 Auto Tune

The function performs updating PID parameters for correct temperature control. It makes the unit can perform the best temperature control in main using temperature for user. If the unit can't control

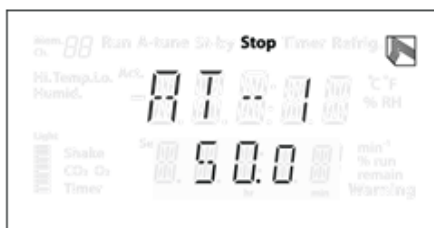
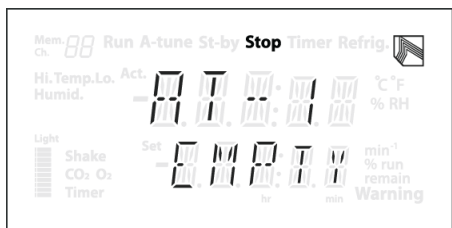
the temperature at first when the user uses the unit, use Auto Tuning function to tune the temperature control parameters. Please see the below sequence to enter the Auto Tuning menu. The unit can tune the best temperature control following PID control and save 3 settings at AT-1 ~ AT-3



- (1) Press the MENU button > SYSTEM CONFI > AUTO TUNE to enter the relevant menu and press the knob at the below display.

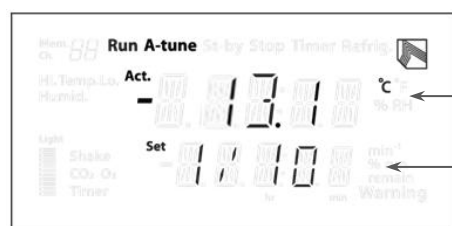


- (2) Choose AT-1~3 using control knob at the below picture and enter the main using temperature.



[The picture indicates selected AT-1 and entered main using temperature: 50.0C]

- (3) When you press the control knob the Autotuning is begin with entered temperature.



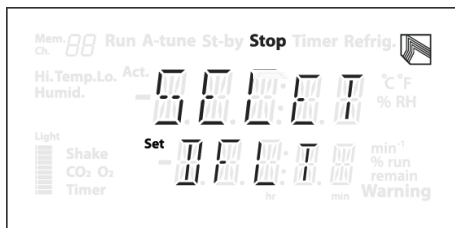
PV on performing  
the Auto tuning  
Indicates Auto  
tuning procedure.

You can cancel the autotuning pressing Knob or STOP button

- (4) You can see the completion message when the tuning is done. Press the knob to save the tuning value.



- (5) Press MENU button > SYSTEM CONF1 > AUTO TUNE > SELECT to open saved tuning value (AT-1~3). If you want to use the other value except for AT-1~3, choose below display.



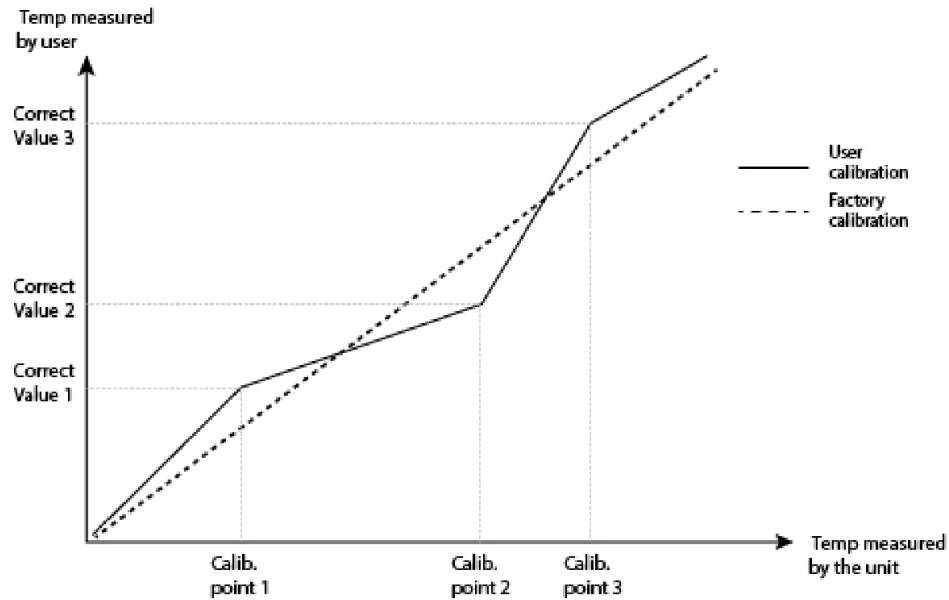
- (6) Use RESET menu to initialize the value of AT-1~3. Press MENU > SYSTEM CONF1 > AUTO TUNE > RESET to initialize AT-1~3 individually.



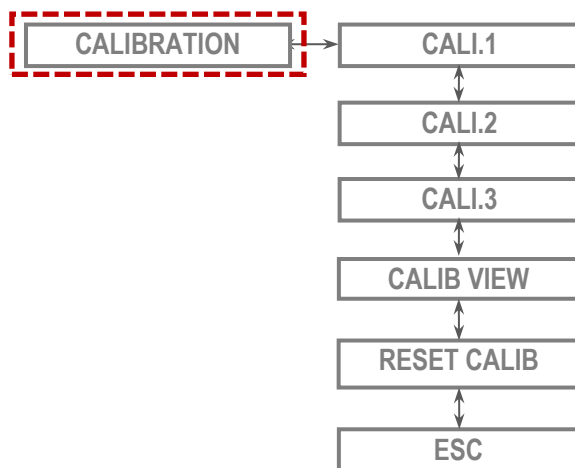
- (7) Rotate the control knob to the end and select ESC (or no input for 20seconds) to go back to main display.

#### 4.6.2 Temp Calibration

You can calibrate the temperature sensor using this function. The unit can tune the temperature with 3 measure point and user's reference measuring equipment. After calibration, the unit recognizes the temperature in the chamber as the one read by user's reference measuring equipment.



Enter the menu following below procedure and the unit can perform temperature calibration with 3points (CALI1, CALI2, CALI3).



- (1) Select MENU > SYSTEM CONF1 > CALIB TEMP to enter below menu.



- (2) Choose CALI 1~3 using control knob and set the temperature for calibration.



[In case of setting CALI2 on 50C]

- (3) After actual temperature inside of the chamber reaches setting value, press the knob to enter the temperature value which user wants to have calibration.



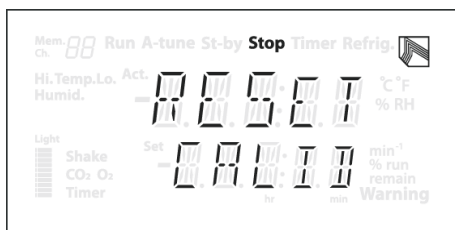
[In case of setting value of 52.0C]

- (4) Press MENU > SYSTEM CONF1 > CALIB TEMP > CALIB VIEW to check the calibration value.



[Picture of checking CALI 2 setting from 50C to 52.0C]

- (5) Press MENU > SYSTEM CONF1 > CALIB TEMP > RESET CALIB to change calibration value to initial value.



- (6) Rotate the control knob to the end and select ESC (or no input for 20seconds) to go back to main display.

## NOTICE

- If the error occurs such as exceed the range of over temperature during temperature control, the control stops.
- As the unit calibrate the temperature in many points, if you input wrong adjustment, the unit can't proceed the calibration.
- You can see the result of the calibration any time in CALIB VIEW. It displays C1, C2, C3 for checking measure points. POINT represents measure points, VALUE represents the setting value of calibration.
- RESET CALIB can reset each Calibration

### 4.6.3 Temp Deviation

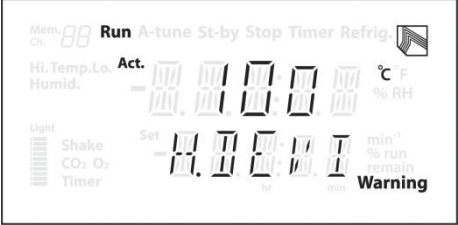
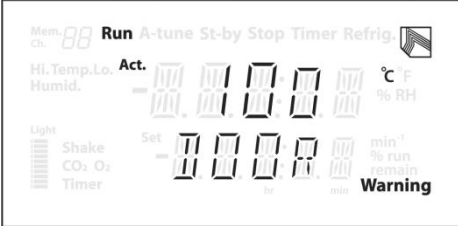
The unit alarms for Deviation warning when the difference between SV and PV value is over allowable range. After the alarm, although the temperature restored to be normal, it takes time for end of Deviation alarm.

4.7 Warning and Fault Messages

The unit alarms user when detecting abnormal state. It can draw your attention with visual alerts. The abnormal condition can be divided depending on serious one (Warning) and normal one (fault).

4.7.1 Warning

Warning: Audiovisual alarm is on but the unit is in operation.  
User can stop the audio alarm by pressing knob and Knob but visual alarm is on until the problem disappears.

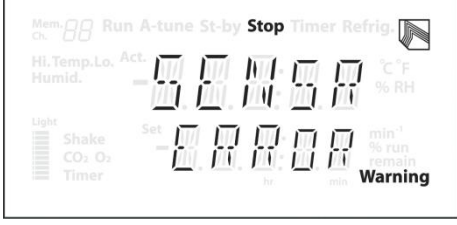
|   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Temp Deviation | <p>The temperature difference between setting temperature and present temperature is more than the range of the permission. The unit check it once the present value reached to setting value. Once the gap is over the permission range, the alarm is generated.</p> <div></div> <div></div> |
| 2 | Door Open      | <p>After 2 minutes of door opening, the audible / visible alarm is effective.</p> <div></div>                                                                                                                                                                                                                                                                                    |

NOTICE

If user set the "Sound off" in Configuration, the audible alarm will be not operation for the warning condition.

#### 4.7.2 Fault

This chart show the fault classified which is made product forced stop. Press the Knob, then the visual warring will be release. The product will be stopped the operation for protect themselves.

|   |                  |                                                                                                                                                                                                                                                                                                                                                  |
|---|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Over Temperature | <p>Activated the electronic temperature limiter. In case of over temperature in chamber, the main power will be cut off due to the temperature limiter for the protect sample and product. Please check again, the set value in over temperature limiter.</p>  |
| 2 | Door Open        | <p>During the product operation, if door is opened more than 5 min. The product will be stopped and the door open fault alarm will be occurred.</p>                                                                                                           |
| 3 | Sensor Fault     | <p>The product operating will be stopped. If the product have problem between temperature sensor and main controller.</p>                                                                                                                                    |

#### 4.7.3 Other notifications

When user press Knob button, the screen will be changed from "Notice" to "Main Display".

|   |            |                                                                                                                                                                                                                                                                                                |
|---|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Auto Start | <p>Notice : to show that the product power is cut off by forcibly, and supplied again</p> <p>When user set the "A.RUN" to "ON" in configuration, the display shoven "A.RUN" and start automatical run<br/>When user set the "A.RUN" to "OFF" in configuration, the display shoven "PWR.F".</p> |
|---|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |  | <div><div>Mem. Ch. 00 Run A-tune St-by Stop Timer Refrig. </div><div>Hi.Temp.Lo. Act.  11.0 °C F</div><div>Humid.  100 % RH</div><div>Light  Shake Set  00:00 min<sup>-1</sup></div><div>CO<sub>2</sub> O<sub>2</sub>  00:00 % run</div><div>Timer  00:00 remain</div><div>Warning</div></div> <div><div>Mem. Ch. 00 Run A-tune St-by Stop Timer Refrig. </div><div>Hi.Temp.Lo. Act.  11.0 °C F</div><div>Humid.  100 % RH</div><div>Light  Shake Set  00:00 min<sup>-1</sup></div><div>CO<sub>2</sub> O<sub>2</sub>  00:00 % run</div><div>Timer  00:00 remain</div><div>Warning</div></div> |
|--|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## 4.8 Safety

### 4.8.1 Over Temperature Protection –Electronic temperature limiter

The electronic temperature limiter is basically equipped (Based on the temperature value of the NTC temperature sensor). The limiter will be stopped the switch off, In case of the chamber temperature become a higher or lower from limiter set value.

The basic usage is as follows.

In main screen: To show current temperature limiter Max. value(H) and Min. value(L).

H : 90 °C

L : -5 °C

In main screen, user can check current temperature by pressing Up/Down key.

Actual PV : XX

Return to In main screen; Stand by 10 sec., or press Config button

If the current temperature value is moving out from limiter setting value (upper value/ lower value), the indicator lamp will be changed from green to orange color.

After then, the over temperature situation is continually staying over 20 sec; ,

- 1) The indicator will be changed red color.
- 2) Display the Protect HIGH.T(High temp.) / LTP(Low temp.)
- 3) Temperature operating device will be Off which is connect with Temp. limiter.

After check the temperature problem cause and take the solving action. (In case of over the limited temperature). Press the Config button with Up/Down button together. The display will be return to main screen

User can change unit and limiter Max. value(H) and Min. value(L). ;

In main screen, Press the Config button about 2sec, the screen will be change parameter setting display.

LOW. T <-> HIGH T. <-> Unit

User can check the parameter setting value 9 using (Config button), and also change the parameter setting value (by Up/Down button)

Lower limit: -10 ~ upper limit (by Celsius)

Upper limit: lower limit to 120 degrees (Celsius criteria)

The screen will be returned to the main screen, If the product is standby condition for 5 sec.

If the temperature limiter shown value is different with actual value (measured calibration temperature device), Please corrected in the following way;

- a. Shut if the power of the product.
- b. Press the Config button with Up/Down button, and turn on the main power.
- c. About 4 sec later, every setting will be initialization and show OFFSET setup screen.
- d. User can set OFFSET value by Config button.
- e. Set the OFFSET value (-10~10 Celsius criteria) by using Up/Down button
- f. Save the Config value.
- g. Supply the main power again to product, the product will be applied by changed OFFSET value.

#### 4.8.2 Current Protection

Fuse : it can automatically shut off the current when overcurrent condition immediately.

#### 4.8.3 Door Switch

The unit heater and fan will be stopping when door is open automatically.

## 5.0 Maintenance

## 5.1 Inspection Cycle

| CLASSIFICATION                                           | INSPECTION TIME FRAME |        |
|----------------------------------------------------------|-----------------------|--------|
|                                                          | DAILY                 | WEEKLY |
| Inspect power cord connection at unit and receptacle.    | •                     |        |
| Inspect power cord for wear, cracks or cuts.             | •                     |        |
| Cleanliness inner/ Outer of chamber                      |                       | •      |
| Cleanliness of Accessories                               |                       | •      |
| Inspect the operating the start/ stop button, dial knob. |                       | •      |
| Inspect the Over Temperature limiter operating           | •                     |        |
| Inspect the accessories setting condition                |                       | •      |

## 5.2 Cleaning

The unit maintains the best condition and operates with full efficiency and extend the life expectancy, only satisfied with periodical cleaning. We suggest that checking cleanliness every day, cleaning the chamber once a week, cleaning the surface of the unit once a month. And immediate cleaning is required when the unit is contaminated.

### 5.2.1 Cleaning the product

Unplug the power cord and clean it with soft and dry towel. Rub the unremoved part, using alcohol solvent (methanol, ethanol) with towel

#### CAUTION

- Do not pour the water on the outside of unit (especially Control Panel), The water could cause short-circuit problem and etc.
- Be caution on the damage of parts inside of chamber and system.
- Do not use acid liquid, benzene, sharp stuff, soap water, cleaner, and hot water. It causes color change or damage on the unit surface. Rubber and plastics parts could be changed in color, shape, and feature. Especially do not use the volatile materials. Use the neutral detergent only with towel. And dry it completely.
- Clean up the inside of chamber with dry towel and wear toxic free glove and mask, when the toxic chemical material or gas generated in inside of chamber.
- In the case of clean up the unit using the method that different form manual, contact to the manufacturer and confirm whether the method damage the unit or not.

### 5.2.3 Accessories

Check the foreign substance attaching on the material before use and rub the accessories with dry towel to prevent foreign substance attaching and maintain the cleanliness.

## 5.3 Move

- (1) When moving the unit, be sure to unplug the power cord from the wall outlet.

(2) Remove all the stuff inside of the unit.

(3) Pack the unit and accessories with proper packing (original packaging or any other proper packing) to protect the product being damaged during the movement of the unit.

---

 **CAUTION**

- Do not move the unit in plugged.
  - Do not make mechanical shock or vibration on the unit.
  - It could cause problem on the later use because of the inner damage
-

## 6.0 Troubleshooting

## 6.1 Malfunction Check list

| Symptoms                                                                  | Check list                                                              | Measures                                                                                                                                                                                                                                          |
|---------------------------------------------------------------------------|-------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| The instrument does not turn on.                                          | Check for improper power                                                | Check the ID plate which is attached to the unit and properly connect the power supply type (voltage, phase, and capacity) supplied to the outlet.                                                                                                |
|                                                                           | Power failure,<br>Check the operation of the distribution board breaker | Check the panel board breaker and restore it to its original state.                                                                                                                                                                               |
|                                                                           | Check for earth leakage breaker or power failure                        | If the building's earth leakage breaker is blocked, find and repair the source of the leakage. Or if there is a power outage, identify the cause and repair it.                                                                                   |
|                                                                           | Check electrical cord connection                                        | Make sure that the power cord is properly connected to the unit and the outlet.                                                                                                                                                                   |
|                                                                           | Check for bad electrical cord                                           | Check the damage about electrical cord, plug, and socket. If there is damage, request the service                                                                                                                                                 |
|                                                                           | Check for the fuse                                                      | Check if the fuse is blown. If necessary, replace with the enclosed spare fuse.                                                                                                                                                                   |
|                                                                           | Internal circuit failure of the device                                  | Apply for the service.                                                                                                                                                                                                                            |
| The controller does not light up even when the power switch is turned on. | Check the power plug connection                                         | Turn off the power switch, then plug the power plug into the outlet.                                                                                                                                                                              |
|                                                                           | Check for earth leakage breaker                                         | Check whether the circuit breaker is OFF. If it is OFF, change the circuit breaker to ON state.                                                                                                                                                   |
|                                                                           | Controller power failure                                                | Apply for the service.                                                                                                                                                                                                                            |
| The instrument does not work cause of over Temp. Limit Error              | "Beep" beeping inside the device                                        | The setting value of over temp. Limit controller which is located on the right side of the instrument should be 10 ~ 15% higher than SV.                                                                                                          |
| All operations are stopped without any other display or button operation. | Check for high-frequency equipment around the equipment                 | If a high-frequency welder, high-frequency sewing machine, or large-capacity SCR controller is installed that generates strong noise in the machine, change the position of the machine. If you have the same symptoms, please apply for service. |

|                                                                                                 |                                                           |                                                                                                                                                                                                                                                                                                                                              |
|-------------------------------------------------------------------------------------------------|-----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Leakage of the building If the circuit breaker continues to be short-circuited                  | Too many plugs are connected.                             | Remove all the devices connected to the breaker and connect them one by one to find out the cause. Do not exceed the capacity of the earth leakage breaker current.                                                                                                                                                                          |
|                                                                                                 | Internal circuit failure of the device                    | Apply for the service.                                                                                                                                                                                                                                                                                                                       |
| The test room earth leakage breaker goes down when the instrument is turned on or in operation. | Check power line overload                                 | Compare the maximum power consumption of the circuit breaker and the total power consumption of the electrical equipment connected to the breaker line.<br>Please check if there are multiple similar devices connected. If unnecessary equipment is connected, unplug it.<br>If the breaker continues to go down, please apply for service. |
| The device's earth leakage breaker which is located inside of instrument goes down.             | Check the leakage breaker capacity                        | The voltage and power consumption of the circuit breaker should be compared with the device ID plate and the correct circuit breaker must be checked at JEIO-TECH Co., Ltd. or place of purchase.                                                                                                                                            |
|                                                                                                 | Check electrical cord damage                              | Please check if the electric cord is broken or the wire cover is damaged. If this happens, you must obtain a new code from JEIO-TECH Co., Ltd. or place of purchase.                                                                                                                                                                         |
|                                                                                                 | Check the moisture on the power supply side               | If there is moisture in the connection between the unit and the electric cord, remove it, clean it, and reconnect it.                                                                                                                                                                                                                        |
| Turning on the power switch immediately turns off..                                             | Check for short circuit                                   | Stop operation immediately and contact your dealer.                                                                                                                                                                                                                                                                                          |
| Frost forms even after defrosting.                                                              | Check whether the defrost function is operating properly. | Contact the service team and request changes to the temperature and defrost settings.                                                                                                                                                                                                                                                        |

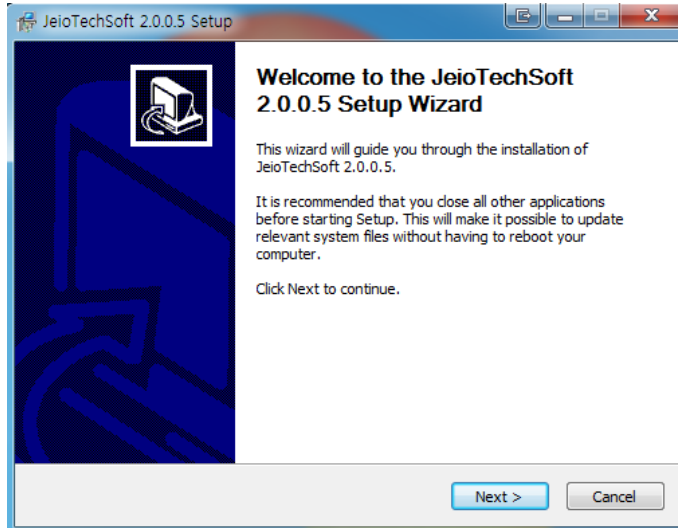
## **WARNING**

- If the unit does not operate normally, turn off the power immediately.
- If you need to apply for service, you must contact JEIO-TECH Co., Ltd. Do not disassemble the unit arbitrarily.
- Only qualified persons are to be handled when handling electrical parts inside the machine.
- If parts need to be replaced, use genuine parts only.
- Failure beyond normal limits can not be maintained technically.

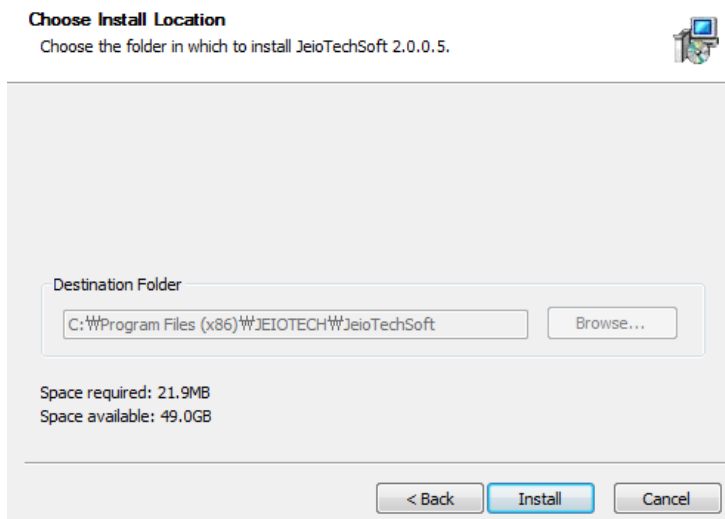
## 7.0 Jeiotech Software

## 7.1 Installing Monitoring Program

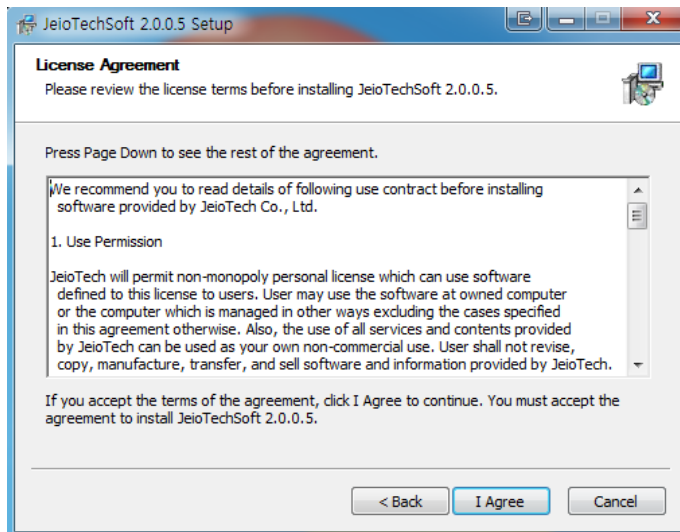
- (1) When you insert the installation CD into the CD-ROM drive, the installation program starts automatically. Click the "Next" button to switch to the License agreement screen.



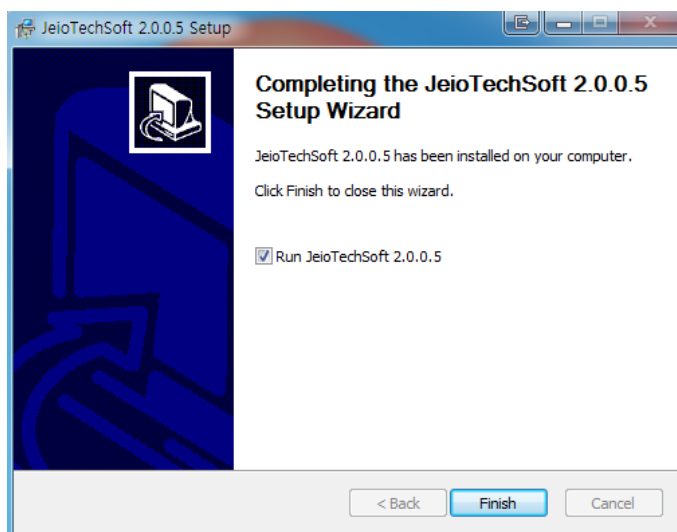
- (2) Before installing JeioTechSoft, review the contents of the license and click the "I agree" button.



- (3) After specifying the save path, click the "Install" button to start the program installation.



- (4) When the program installation is completed, JeioTechSoft icon will be created on the desktop as shown below.  
Run by JeioTechSoft 2.0.0.5 Check the list box or double click on the desktop icon to run the program.



## NOTICE

- During JeioTechSoft program execution, input values of temperature, timer, and pump circulation amount can be directly by numeric keypad of computer keyboard or by ↑ or ↓ of direction key. In this case, the number of digits of input value can be moved by using ← or → direction of key or by entering "." In the place of decimal point.
- If you press the Delete key on the computer keyboard, the input value becomes "0".
- If you enter a value greater than the possible value, the maximum value that can be entered is entered.

## 8.0 Appendix

## 8.1 Technical Specifications

| Model                                         | IL3-15                              | IL3-25                               | IL3-15A                             | IL3-25A                             |
|-----------------------------------------------|-------------------------------------|--------------------------------------|-------------------------------------|-------------------------------------|
| Chamber volume (L/cu ft)                      | 150/5.3                             | 242/8.5                              | 156/5.5                             | 254/8.97                            |
| <b>Temperature</b>                            |                                     |                                      |                                     |                                     |
| Range (°C/°F)                                 | 0 to 80/32 to 176                   |                                      | 4 to 70/39.2 to 158                 |                                     |
| Fluctuation at 37°C (±°C/°F)                  | 0.1/0.18                            |                                      | 0.2/0.36                            |                                     |
| Variation at 37°C (±°C/°F)                    | 0.8/1.44                            | 1.0 /0.18                            | 0.7/1.26                            | 1.0 /0.18                           |
| Heating time 20 to 70°C(min.)                 | 43                                  | 45                                   | 45                                  | 50                                  |
| Cooling time 20 to 5°C (min.)                 | 45                                  | 50                                   | 53                                  | 58                                  |
| Recovery time at 37°C (min.)                  | 4                                   | 4                                    | 5                                   | 5                                   |
| <b>Dimensions</b>                             |                                     |                                      |                                     |                                     |
| Interior (W x D x H, mm/inch)                 | 600 x 500 x 500<br>/24 x 20 x 20    | 500 x 520 x 930<br>/20 x 20.5 x 36.6 | 600 x 520 x 500<br>/24 x 20.5 x 20  | 500 x 540 x 940<br>/20 x 21.3 x 37  |
| Exterior (W x D x H, mm/inch)                 | 720 x 760 x 1070/28.3 x 29.9 x 42.1 | 620 x 770 x 1618/24.4 x 30.3 x 66.1  | 770 x 790 x 1115/30.3 x 31.1 x 43.9 | 670 x 805 x 1668/26.4 x 31.7 x 65.7 |
| Net weight (kg/lbs)                           | 100/220                             | 135/294                              | 108/238.1                           | 145/319.7                           |
| <b>Shelves</b>                                |                                     |                                      |                                     |                                     |
| Quantity of shelves (standard / max)          | 2 / 1                               | 3 / 25                               | 2 / 11                              | 3 / 25                              |
| <b>Electrical requirements (230V/50Hz, A)</b> | 4.5                                 | 6.4                                  | 6.6                                 | 8.0                                 |
| <b>Electrical requirements (120V/60Hz, A)</b> | 8.3                                 | 10.6                                 | 10.2                                | 12.3                                |

※ Above specifications are subject to change without notice due to improvement in product quality and performance.

※ A defrost cycle is applied when operating with a temperature setpoint of 40°C or below. Temperature and defrost settings may be modified depending on the operating environment.  
(Request service)

## 8.2 Disposal of instrument

Before disposing of the device or its components, observe the following precautions.



- (1) This equipment is enough to potentially exposed to biological, chemical, or radioactive material, so the person responsible for disposing of the equipment and the waste disposer need to check essentially that the equipment should be cleaned for the purpose of protecting the environment
- (2) Please refer to the person in charge of disposal of the equipment to check the electrical, electronic and material disposal standards. If you request to external agency it is advisable to refer to a testing equipment company that can properly dispose of its branch, vendor, or laboratory equipment and its components.

## 8.3 Warranty

### 8.3.1 Warranty period

- (1) If the product fails during normal and proper use, the warranty period for manufacturing liability shall be two years from the date of delivery.
- (2) If you request a repair, please check the items below and let us know so that you can get a quicker and more accurate repair.

- |                                                                                                                                                                                               |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"><li>• Date of purchase:</li><li>• Customer name / address / phone number / E-mail:</li><li>• Fault status</li><li>• Model</li><li>• Serial number</li></ul> |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### 8.3.2 Technical Service Contact Points

Technical Services

Address : 153 (Youngsan-dong), Techno 2-ro Yuseong-gu, Daejeon-city, 34025, Republic of Korea

Tel : +82 (0)2 -2627-3824

Website : <https://www.jeiotech.com/eng/>

E-mail : [overseas@jeiotech.com](mailto:overseas@jeiotech.com)

### 8.3.3 Certificate of Product Warranty

This is a guide to the product quality warranty and service terms provided by JEIOTECH Co., Ltd

All products are guaranteed to operate normally when installed under proper conditions, as specified in the user manual for each product, and used according to the intended purposes and permissible operating conditions.

The warranty period for product quality starts from the delivery date and is indicated in the catalog provided for each product or in the purchase order agreed upon with the customer. If a product malfunctions within the warranty period, JEIOTECH Co., Ltd. provides free repair services. However, among the transportation costs incurred during the repair process, any special costs resulting from the customer's site conditions (e.g., door or wall modifications, use of special handling equipment) are not covered under the warranty. Furthermore, JEIOTECH's liability under this warranty is limited to replacing the product or refunding the original purchase price at JEIOTECH's sole discretion if reasonable attempts to repair or replace the product fail.

Parts replaced during free repairs within the warranty period become the property of JEIOTECH Co., Ltd. Additionally, the warranty period is not extended due to free repairs. JEIOTECH is not responsible for any losses incurred by the customer due to delays in repairs caused by issues such as part shortages or shipping delays.

The following cases will be handled as paid repairs, even within the warranty period:

1. Non-defective cases

- \* Requests to resolve issues arising from improper operating environments or abnormal installations.
- \* Reinstallation requests or connections with external equipment other than the initial installation.
- \* Requests for usage instructions or simple adjustments that do not require disassembly.
- \* Inspections of non-defective products.
- \* Cleaning or debris removal service requests.

2. Failures caused by user errors:

- \* Malfunctions due to usage not in accordance with the user manual.
- \* Issues resulting from improper operating environments or abnormal installations.
- \* Malfunctions caused by incompatible chemical usage.
- \* Malfunctions caused by irregular or improper electrical or utility supplies.
- \* Damage due to product movement, storage, external impact, or dropping by the customer.

\* Malfunctions resulting from unauthorized modifications or repairs without prior written approval from JEIOTECH Co., Ltd.

- \* Malfunctions caused by using consumables or optional components not specified by JEIOTECH Co., Ltd.
- \* Repairs performed by personnel other than JEIOTECH or its authorized service agents.

3. Other cases

- \* When the product model or serial number has been damaged, removed, manipulated, or altered.
- \* Malfunctions caused by fire, flooding, or other natural disasters.
- \* Failure due to consumable parts reaching the end of their lifespan (e.g., lamps, filters, fuses, gaskets, packings, hoses, heat transfer fluids).
- \* Natural wear and tear (e.g., discoloration, screen printing degradation).
- \* Damage or malfunction of product accessories (e.g., power cables, data cables, glass components) or options.
- \* Malfunctions caused by errors in computers, computer components, or connected network systems.

- Before JEIOTECH performs free or paid repairs or accepts the return of a product, the customer must ensure the product has been decontaminated of chemical and biological hazards.
- Replacement parts used during repairs may differ from the original but will function correctly and be equivalent in performance.
- JEIOTECH does not bear any responsibility for damage to stored samples, data loss, or any other direct or indirect damages caused by product malfunctions, regardless of the warranty period.
- JEIOTECH does not guarantee issues related to computers, computer components, or network systems connected to the product, regardless of the warranty period.
- This warranty is the sole and exclusive warranty provided. Any implied warranties imposed by applicable laws are limited to the warranty period stated herein. This warranty cannot be modified by any verbal advice, statements, or documents on behalf of JEIOTECH unless explicitly labeled as a "Warranty Amendment" and signed by an authorized representative of JEIOTECH.
- This warranty applies only to products purchased for direct use by the customer. It does not cover products purchased for resale purposes without prior written approval from JEIOTECH.
- This warranty does not apply to consumables and is non-transferable.

- ✧ The contents of this manual can be changed or upgraded without prior notice.
- ✧ The copyright of this manual is reserved by Jeio Tech.