



Operation Manual

Clean Bench

Model : BC-01H, BC-11H, BC-21H
Manual No. : A5011L002 Version : 0.0



 **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

Quality Management System



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1.0 Safety

1.1. How to use manual

1.1.1. Introduction

This manual is intended for individuals requiring information about the use Clean Bench. Use this manual as a guide and reference for installing, operating, and maintaining your Jeio Tech Clean bench. 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.

The Operation chapter includes a description of controller features, key name, product operation information Maintenance sections are included 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 Appendix contains technical specifications, warranty and Jeio Tech technical support contact information

1.1.3. Model number nomenclature

The following describes the model number nomenclature used in throughout the manual.

Clean benches	BC-H type series		
model	BC-01H	BC-11H	BC-21H

1.2. Safety Notice

Be sure that you are completely familiar with the safe operation of this Clean bench. 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 Clean bench. If there is any question of the safety of a procedure please contact Jeio Tech before starting or stopping the Clean bench.

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 Clean bench 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.



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

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 fluids or cleaners



No water

Warning



Electrical shock



Hand crush or pinch



Flammable



Foot crush



General caution



Sharp points



Lifting hazard



Do not take the device apart deliberately.



Check the UV lamp turned off before opening the door.

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 Clean bench or a feature.



Permissible
ambient
temperature



Altitude



Relative humidity



Earth Ground

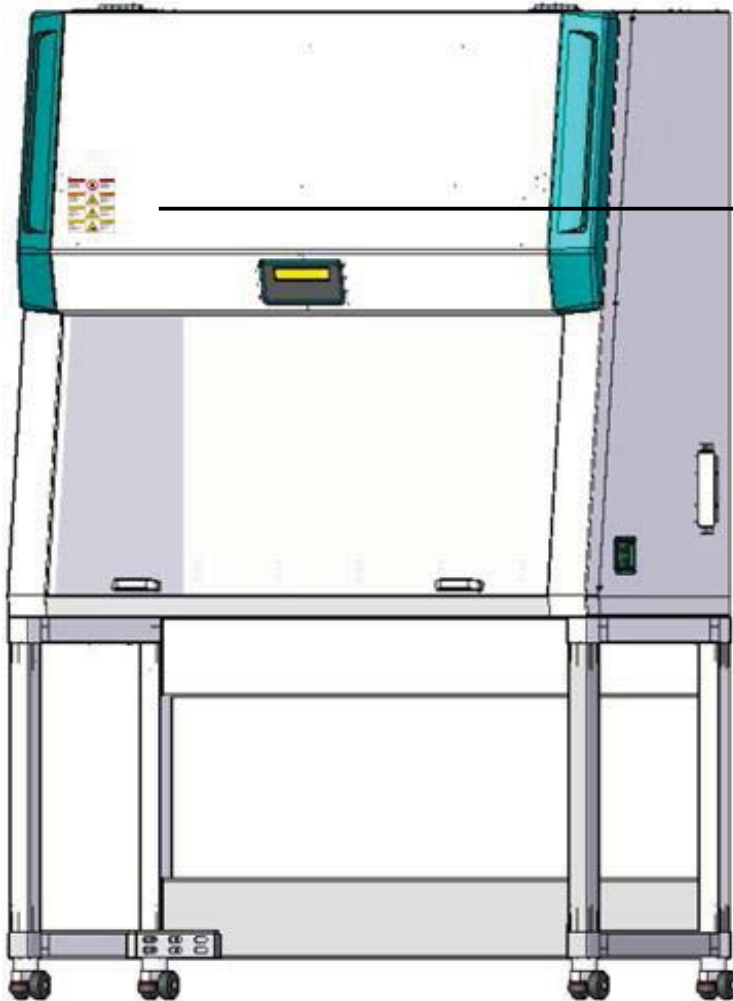


Note

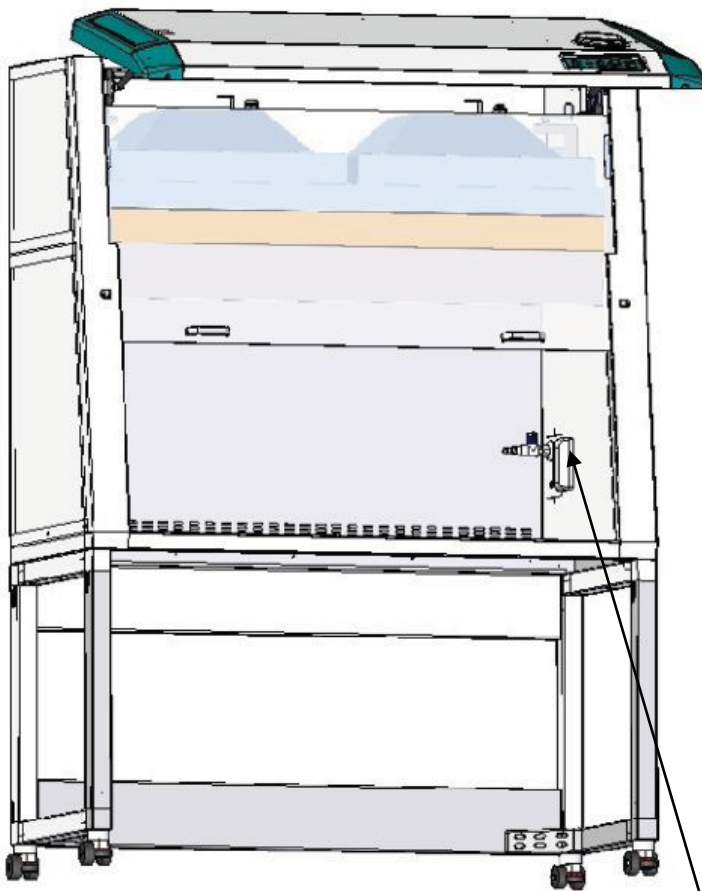
1.4. Labels on the unit

The safety labels are attached to the Clean bench to provide 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 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.



⚠ 위험		⚠ DANGER
가연성 물질이나 폭발성 물질을 저장하지 마세요.		NOT FOR FLAMMABLE STORAGE.
⚠ 경고		⚠ WARNING
문을 열 때는 UV가 꺼졌는지 확인하세요.		CHECK THE UV LAMP TURNED OFF BEFORE OPENING THE DOOR.
⚠ 주의		⚠ CAUTION
고장 위험 임의로 분해하지 마세요.		BREAK DOWN Do not take the device apart.
⚠ 주의		⚠ CAUTION
손포심 문을 닫을 때 손을 주의하세요.		HAND INJURY Hand crush or pinch.



 **CAUTION**
Max. Rated Current : 5A

1.5. Precautions for Your Clean bench

Our Clean bench 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 auto clever, 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 Clean bench 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 Clean bench while it is plugged into the power source.

DO NOT use or keep flammable gases near the Clean bench.

Do not install the Clean bench 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 Clean bench to direct sunlight.

Do not expose the Clean bench to direct heat sources.

Do not use the Clean bench in places where moisture is high and flooding can occur.

Do not install the Clean bench near machinery generating high frequency noise

Do not use Clean bench in environments that contain industrial oil smoke and metallic dust.

DO NOT operate damaged or leaking unit.

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

Do not disassemble, fix or change the Clean bench other than for those items described in this operating manual.



1.5.2. Caution statements



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.

Do not touch it with wet hands and put the main plug correctly.

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.

Contact expert when you replace HEPA FILTER

Do not put something on Prefilter and not to close prefilter

Do not work around Clean bench as much as possible during UV Lamp on

Do not give too strong power when you open sliding door

After installation, fix the unit by using stopper

Do connect Plug tightly



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. Introduction

The Clean bench filters 0.3 μm with 99.99 % through Leak-tight HEPA Filter and supply vertical Laminar Flow to work surface as Vertical Type Clean Bench) and has excellent performance with UV, automatic keeping velocity, and to know replacement time by checking Hepa filter & UV Lamp.

Applications are as below in the Lab.

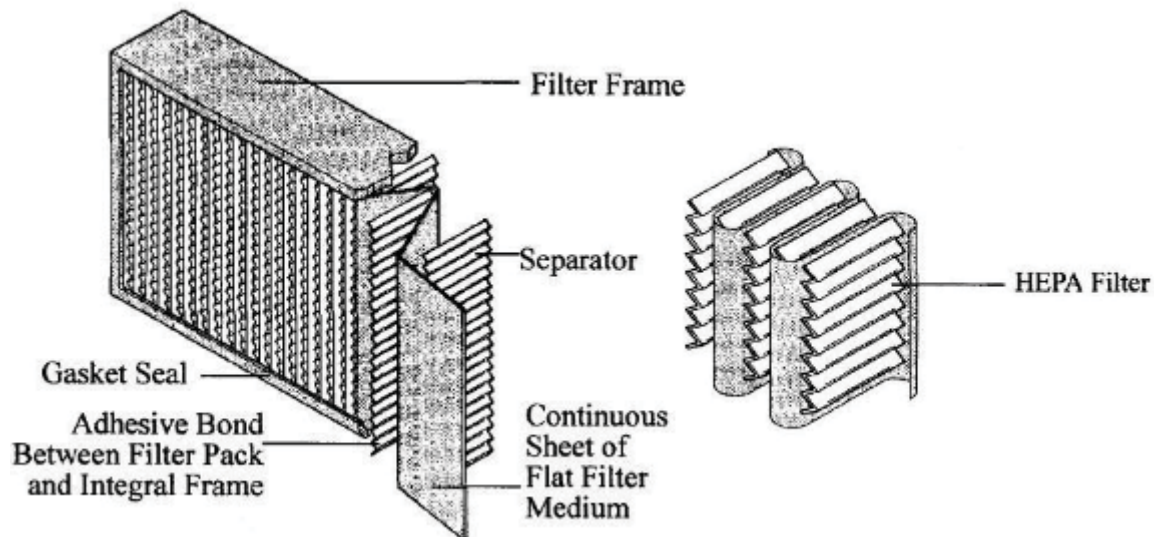
- Electronics Inspection / Repair
 - General Forensics
 - Non-biohazard [Tissue] Culture Maintenance
 - Non-toxic IV Solution Preparation
 - Plant Tissue Culture Maintenance
 - QA/ QC Testing
 - Sterilie Media Preparation
 - Syringe Filling
 - Tissue Fixation / Staining Preparation
- HEPA Filter

HEPA filter is composed of Micro Glass Figer and remove diameter 0.3 μm particulates with 99.99 % (refer to features) There are some factors which affect to filter's performance that are diameter of fiber,thickness of filter, face velocity.

Contaminated materials should be removed by 5 mechanizm that are Sedimentation, Electrostatic attraction, Interception, Impaction, iffusion. But can be removed not gas but particles.

The life of HEPA filter is different from how using it, but normally approximate 10,000hours.

HEPA filter can be broken easily, if filter get damage on the surface of filter, you have to replace the filter or take test for the performance.



Vertical Laminar Flow

Vertical Laminar Flow is way to discharge clean air from filter on the upper side to work surface by forming vertical regular air current.

If there is big sample on the work surface, there is no inhale external air from out side. Because front door can make positive pressure.

FEDERAL STANDARD 209E, Class 100

It is designed by FEDERAL STANDARD 209E Class 100
Cleanliness class for standards is below table.

Standard		FEDERAL STANDARD 209E		ISO 146441-1		KS M 9901		KGMP	
Cleanliness class		Class 100		Class 5		Class 5		1A (Class 100)	
standard		piece/ft3 (liter)		piece/m3		piece/m3		piece/m3	
Particle	diameter (µm)	0.5	5.0	0.3	0.5	0.3	0.5	0.5~5.0	5.0
	Particle count(piece)	100(3.5)	0	10,200	3,520	10,100	3,500	3,500	0

2.2. Features

2.2.1. Excellent performance

(1) High reliable clean environmental supply

Removing 0.3 μm particulates with 99.99 % by Leak-tight HEPA Filter.

(2) Automatic keeping velocity

Digital Airflow Rate Sensor makes keeping velocity as set value regardless opening/closing door and extend life time of HEPA Filter.

(3) High quality Laminar Flow forming

Applied Diffusing Muffler makes forming high quality Laminar Flow.

To go smooth Flow, Slot on the down and inner side of chamber is supposed to shut off by Strip Shield when blower stops. And minimize possibility of contamination in the work space.

(4) HEPA Filter & UV Lamp's self-check function

Digital differential pressure sensor can check the state of HEPA and you can know the timing of replacement.

UV Sensor can measure UV illuminance intensity, if illuminance intensity is under 80% of initial intensity, automatically informing the timing of replacement..

(5) 8 steps adjustable velocity

Adjustable from 0.3 m/s to 1.0 m/s, the unit is 0.1 m/s

(6) Front Access

To easy regular validation, we designed the unit for easy maintenance.

In additions, there is inlet of GAS(DOP.PAO etc) in front side for test performance of HEPA.

Filter replacement methods is Cartridge type in easy way. (Patent Reg. No. 20-0446561).

(7) Silent operation

Noisy level is under 65 db.

2.2.2. Improved ease of use

(1) Smart Door System (Patent application)

It's designed to activate the switch of UV, FL and Blower in UV sterilization mode for ease of use. Instead of a series of actions for the UV lamp on, fluorescent lamp on and blower switch on, only to open the sliding door gently is needed to activate all of actions. Each action including opening the door can be also operated by touching each buttons independently.

(2) Dual display and controller

There are 2 displays and controllers at the outside and inside of the unit.

So, it makes it easy to change the working conditions, as well as reduces the chance of contamination during the operation by checking the temp. and humid.

(3) Smooth door opening and visibility

By adopting a new mechanism(Patent application) of sliding doors, users can open and close the door with easy, and also it make it to secure the wide of view.

(4) Utilizing magnetic board.

User can refer to the magnet memo or a simple experimental tool on the right/left wall of inside unit.

(5) The recessed outlet, valves and nozzles for Gas & air inside of the unit for ease of use are arranged to facilitate use of space.

(6) Stopper is equipped with wheels which make it easy to move and secure.

(7) Door alarm

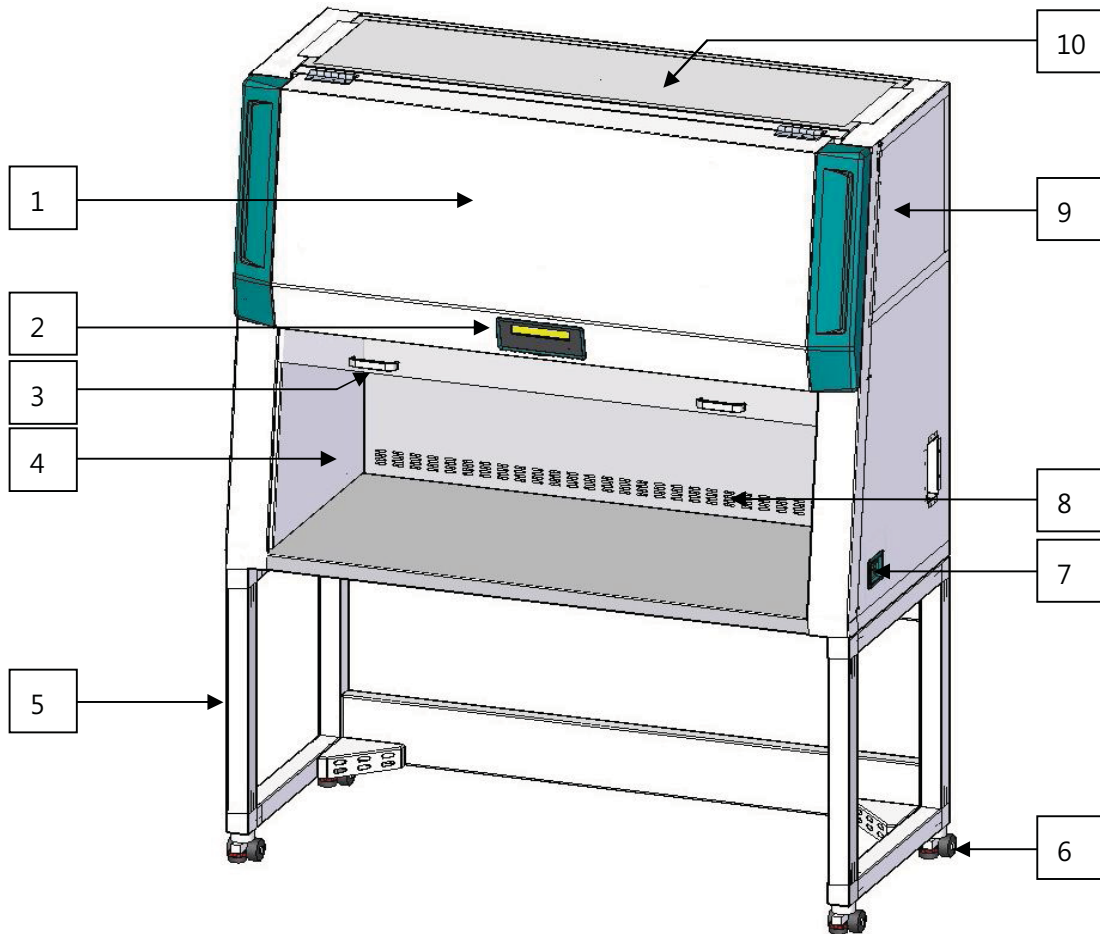
Door open warning will be displayed when the door is open over 20cm of door height of the unit during the operation.

2.2.3. Improved safety

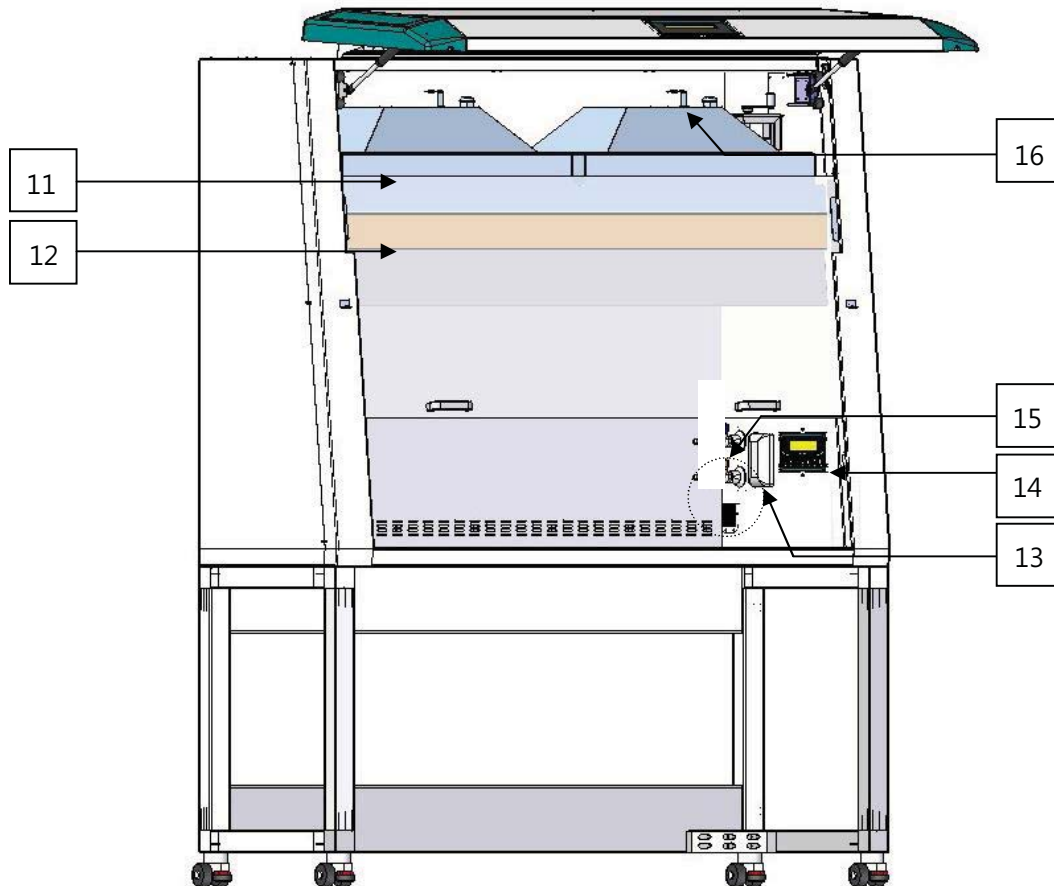
Auto switching off of UV fertilization lamp is not allowed to get the skin burn of users when the door opens by accident.

The tempered glass which blocked the UV rays on the front door is to make it strong against a strong impact and easily broken into pieces to prevent personal injury.

2.3. Structure



- (1) Front Cover
It consists of HEPA filter and Blower unit.
- (2) Control panel
It mainly consists of touch button and VFD(Vacuum Fluorescent Display).
- (3) Sliding door and knob
It's made of tempered glass which blocks the UV ray, and makes it easy to open and close. And also enable to look thru it in the working surface.
- (4) Magnet board
A test memo or a simple tool is attachable to the right/left wall of inside of unit.
- (5) Stand(Optional)
Supports the unit.
- (6) Wheel
Easy of movement, and easy of fixing the unit with stopper on the wheel.
- (7) Main power switch
It's the main switch on/off of the unit. If it's on, it comes the main power and light on control panel.
- (8) Air Slot
It makes it air out to the rear of the unit thru this hole without formation of turbulence.
- (9) Panel cover
Make sure service person open this cover to replace the part like fuse, electric parts.
- (10) Pre-filter
Filtered airborne dust as the first filter.

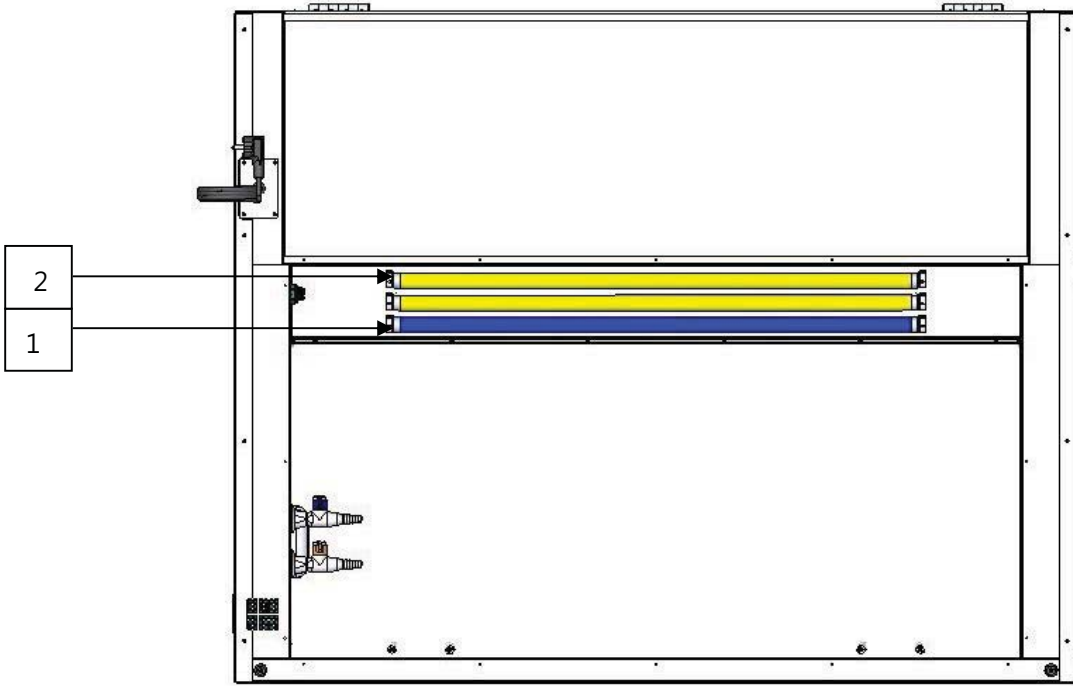


- (11) Blower Unit
It consists of motor and ventilator which intake the outside air and sends it the HEPA filters.
- (12) HEPA Filter
This high-pass filter filters out 99.99% of 0.3 μm particles.
Easy to replace by pulling it forward.
- (13) Power socket
The recessed safe socket with cover can be used to power in the workspace.

⚠ CAUTION

Only 5A or less can be connected to the unit.

- (14) Inside control panel
It's located on the right wall of inside unit, which helps prevent the formation of turbulence during the operation.
- (15) Gas cock(Optional)
The valve and nozzle for gas and air required for operation can be used.
Gas in blue and Air in orange.
- (16) Connector for test
A spare test connector is useful for performance evaluation(Validation Test).
Please close the cap when not in use.



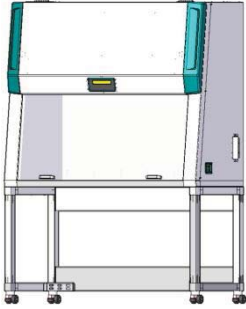

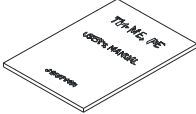
- (1) UV Lamp
- (2) Fluorescent Lamps

3.0 Installation

3.1. Unit components

After unpacking, please check the contents to ensure you have received all the following components. Kindly check if the model is correct on ID label according to your purchase order.

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 by referring to the distributor list #8.6.

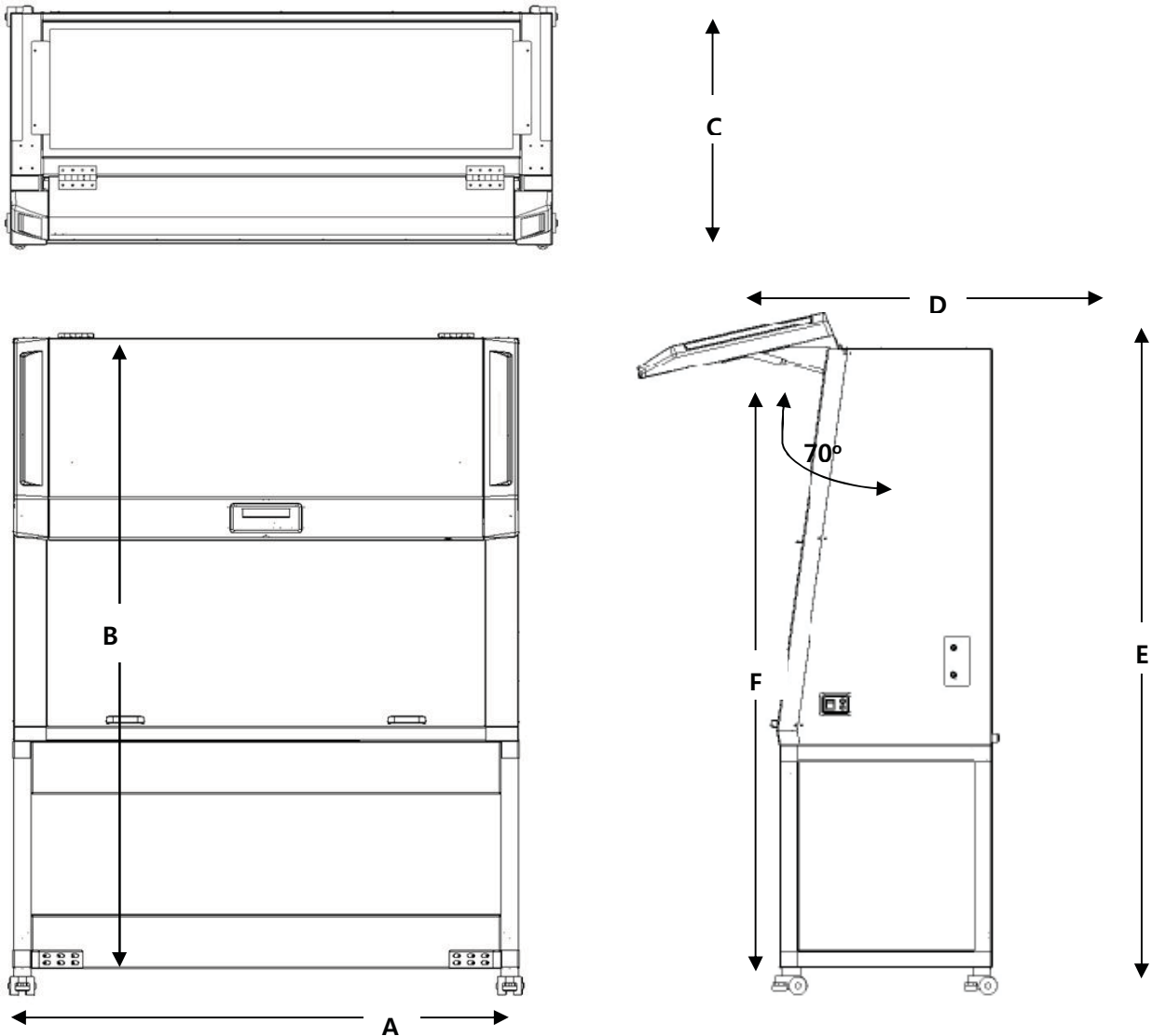
Item	Figure	Quantity	Description
Main body (Unit)		1	Stand : Optional
Fuse (Spare) : 250V, 10A		2	-
Operation manual		1	-

3.2. Preparation for installation

3.2.1. The minimum required space

In order to install the unit correctly, please identify the size and turning radius first.

Please consider the installation space for gas and air when installation, and keep a distance between the unit and the wall for the proper operation as shown in the following pictures.



Dimension unit : mm(inch)

Model	A	B	C	D	E	F
BC – 01H	1135(44.7)	1870(73.6)	647(25.5)	1025(40.4)	1965(77.4)	1775(70.7)
BC – 11H	1435(56.5)	1870(73.6)	647(25.5)	1025(40.4)	1965(77.4)	1775(70.7)
BC – 21H	2035(80)	1870(73.6)	647(25.5)	1025(40.4)	1965(77.4)	1775(70.7)

3.2.2. Installation conditions.

The unit can be safely operated when the following environmental conditions are satisfied.



Prevent from the direct sunlight.



Keep it the environmental temperature at 5°C~40°C.



Keep it under 80% relative humidity.



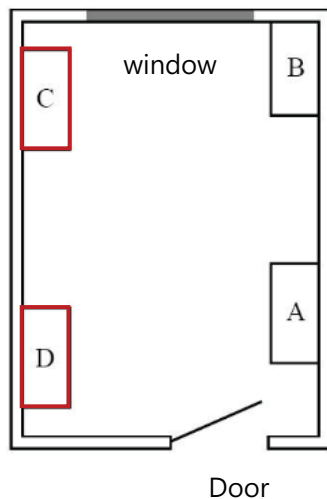
Keep it under below the altitude 2,000m.



Check earth ground.

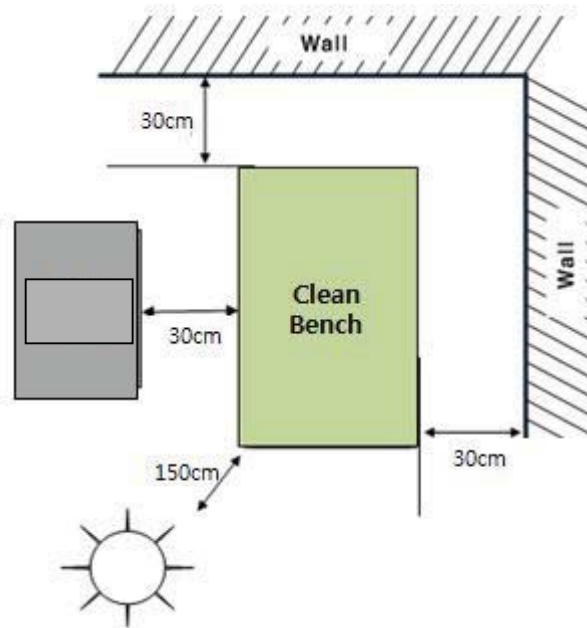
3.2.3. Location conditions

- (1) The clean bench should be located away from entrance, fans, fume hood, high traffic areas and doors that could interfere with its airflow patterns. All windows in the laboratory room should remain closed. See the proper location

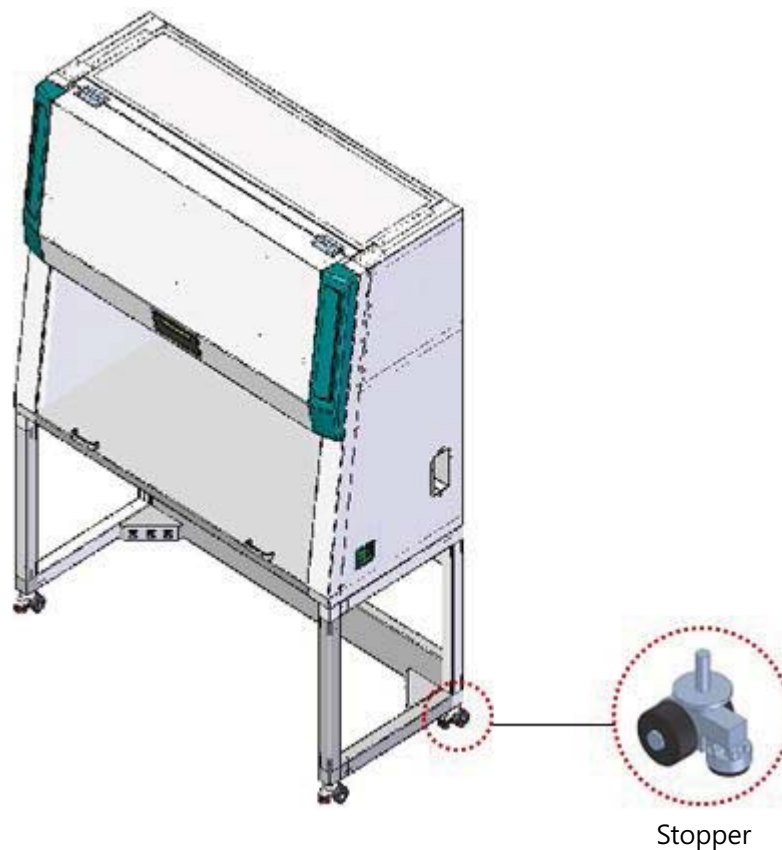


A, B: Improper location
C, D: Proper location

- (2) Install the unit on the robust and flat floor.
- (3) Keep away from Fan, Humehood, Air conditioner or other similarities.
- (4) Keep a distance of 30cm from the wall or other laboratory equipments.



Fix the stopper to the wheels after installing of the unit.
The wheel will be fixed when the stopper is turned clockwise, and one will be released when the stopper is turned anticlockwise



 **WARNING**

Read Warning message of manual 1.5.1 (p 9~10)

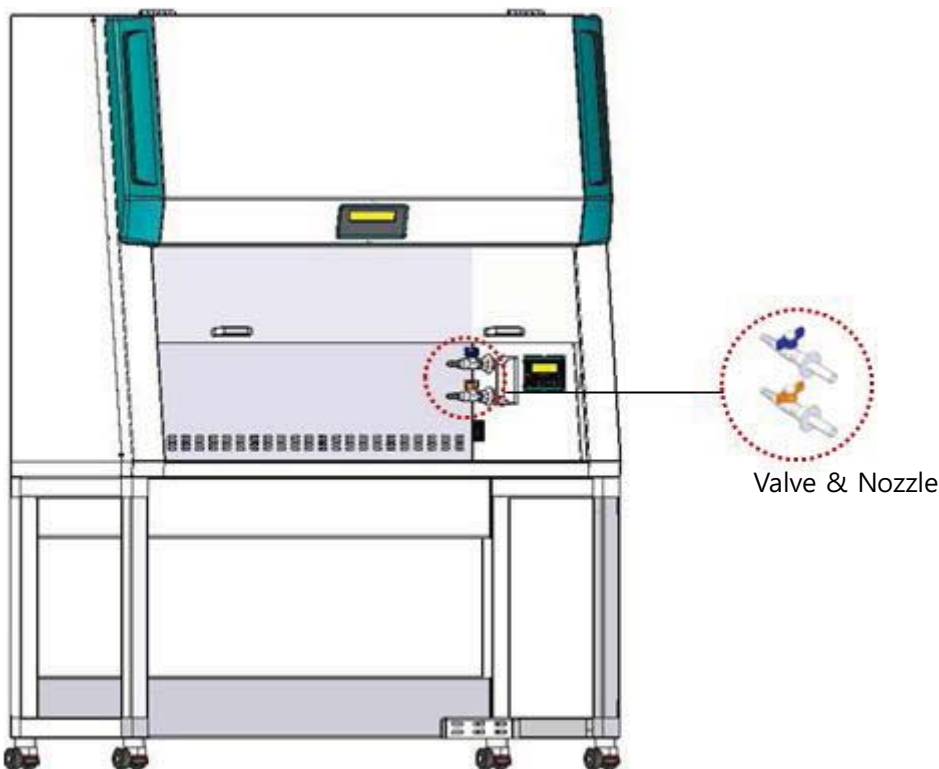
⚠ CAUTION

Install the unit according to the correct level. UV lamp does not work if the door is not closed completely due to the unmatched level of the unit.

Read the instruction of manual 1.5.2 (p 10~11)

3.2.4. Connection Gas cock (Optional)

The valves for gas and air are located on the right side of the unit and which can be connected to gas, air and aspirator during the operation. The valve for gas is in blue, the one for air is in orange for easy of distinction.



If you use the valve, you should install the Emergency gas shutoff valve the nearby location for the safe operation. Before connecting the Gas, you have to close the valve which located inside. After using it, you should close the valve to prevent the Gas leak and check the Gas condition periodically.

⚠ WARNING

If you connect the LPG or inflammable gas, it should be installed by technical expert with certified by the government.

If you use the valve, you should use Gas and Air as separately to prevent the possibility of taint.

We recommend the Gas leak check once a month cycle.

3.2.5. Power supply

Jeio Tech Clean Bench Series are designed as single-phase power with grounding. You can find the voltage and electric current capacity in the attached ID Label. You should check the ID Label and use felicitous power. It is possible to use $\pm 10\%$ power.

After checking the power and you should check the socket as the picture. You should use exlusive socket for this unit. If you have wrong electric cord, please contact to seller or Jeio Tech.

If the power cord is short, you can use extension cord which is suitable for power voltage and observed IEC60320 standard. It is possible to use extension cord which has over 1.5 times capacity than maximum power (IEC60320 standard)

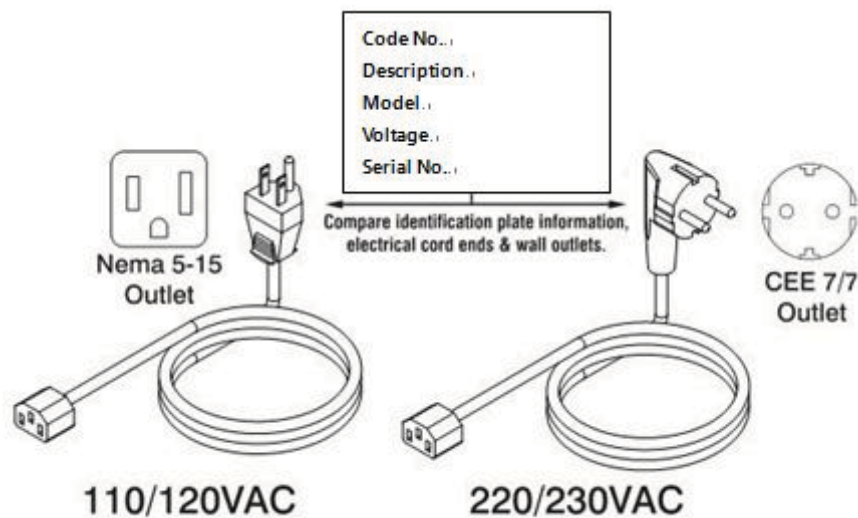
Please follow below step to connecting power.

Step 1 : Please check the voltage and electric current capacity (ID Label)

Step 2 : Please check the socket.

Step 3 : Before supplying the power, you should power switch Off.
(Power switch located at the low right in Front Cover)

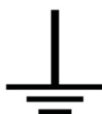
Step 4 : You can connect the main power cord in socket.



WARNING



Electrical Shock
Hazard



Please check the power voltage, Phase, electric current capacity and connect properly.

Do not use divergence socket or double tap. Over voltage can cause damage or fire of Cable.

Impropriety power connection can cause damage of machin or serious injuries in body and even death.

Do not touch the electric parts or power corde with your wet hands.

You have to use power with grounding certainly.

3.3. The First operation

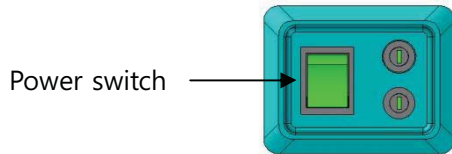
3.3.1. Check list before using the machine

- (1) Power connection.
- (2) Fixing condition with stopper.
- (3) Horizontal of machine.
- (4) Enough space for the safety operation.
- (5) Check the foreign material in Pre-filter.
- (6) You should remove the surrounding environment of air flow that can make the strongly disturb.
- (7) You should remove inflammability or exposable liquid in surrounding environment.
- (8) When you operate the machine first time, you should do the HEPA Filter Leakage Test or Particle Count Test, Down Flow Velocity Test.
- (9) Please check the efficiency of Blower, HEPA Filter and UV Lamp first time. Then you can compare the present efficiency of HEPA Filter and UV Lamp.

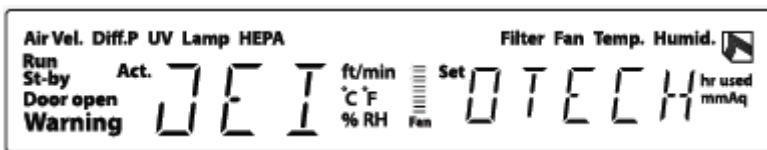
3.3.2. Start of the machine

After connection the power cord and turn on the power switch, the machine will start as below.

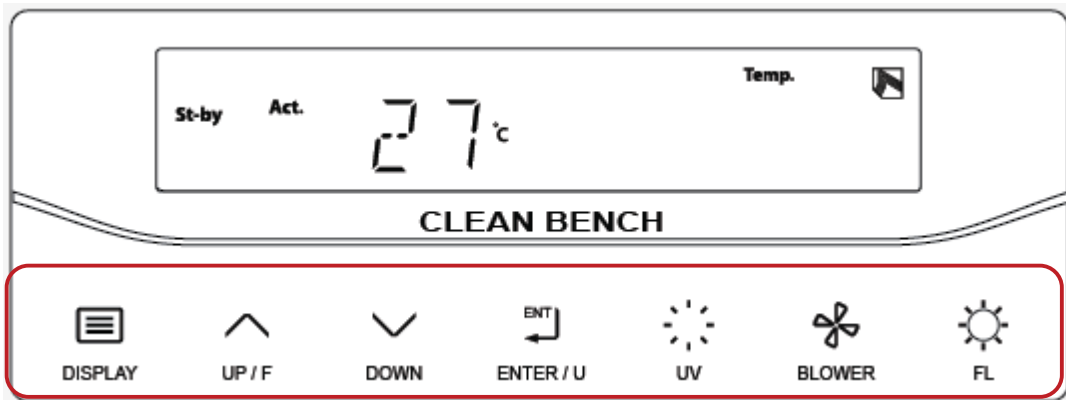
- Turn on the power switch which located right side.



- Power switch will lights on with alert sound.
- In VFD, the first stage screen will display about 3 seconds.

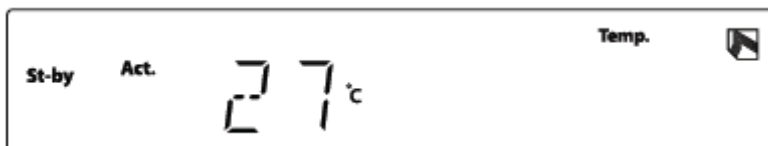


- After turn off the VFD fist stage screen and controller button will lights on.

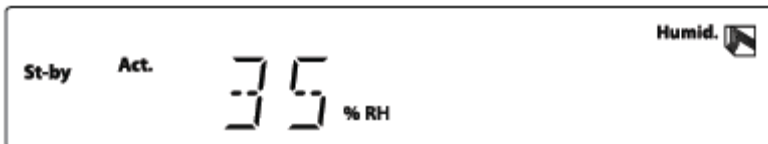


Light on of the controller button and at the same time, basic operation screen will display in VFD as below. At present Temperature, Humidity and wind velocity take turns showing as 5 times about 3 seconds.

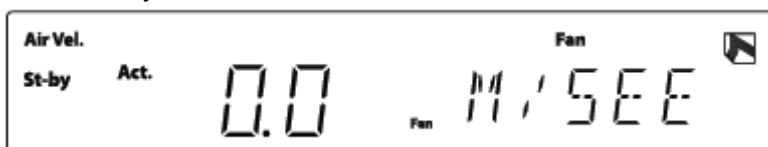
Temperature indication



Humidity indication



Wind velocity indication



After repeating the 5 times, controller will stand by at wind velocity condition.

During the basic operation, you can start the machin by using the touch button.

CAUTION

- When you turn on the power switch and during the basic operation, in the wind velocity screen, it can be displayed digit 0.1~0.2 (not 0) some seconds. This is a typical characteristic of heat rays anemograh so it is not a sensor malfunction. It is normal operation and there are no problem of machine operation and test.

3.3.3. End of the machine

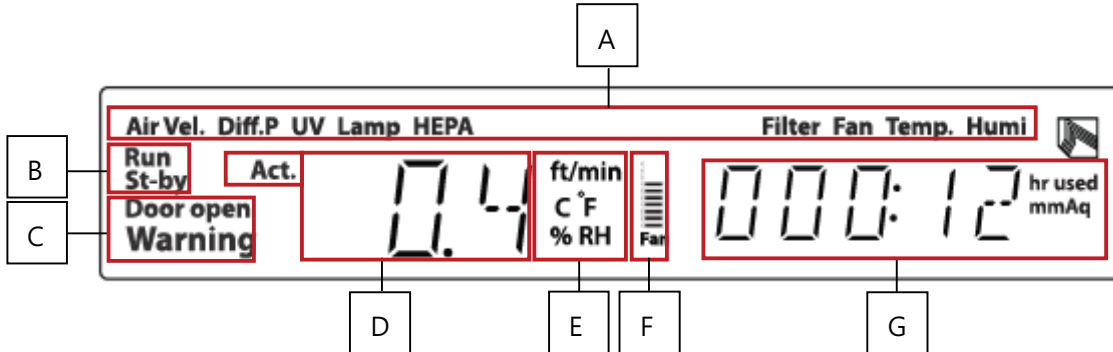
- (1) After finishing the operation, you should clean up the work face.
- (2) Do not turn off the Blower immediately, after closing the door and operating it about 5 minutes. Using this process, you can remove the inside of pollutant and prevent the entering the outside of pollutant.
- (3) After 5 minute, turn off the Blower and fluorescent light.
- (4) For the next user, nomarly you can turn on the UV lamp, But is you do not use it long time, turn off the power.

4.0 Operation

4.1. Name and function of control panel

Control panel consist of VFD and touch button.

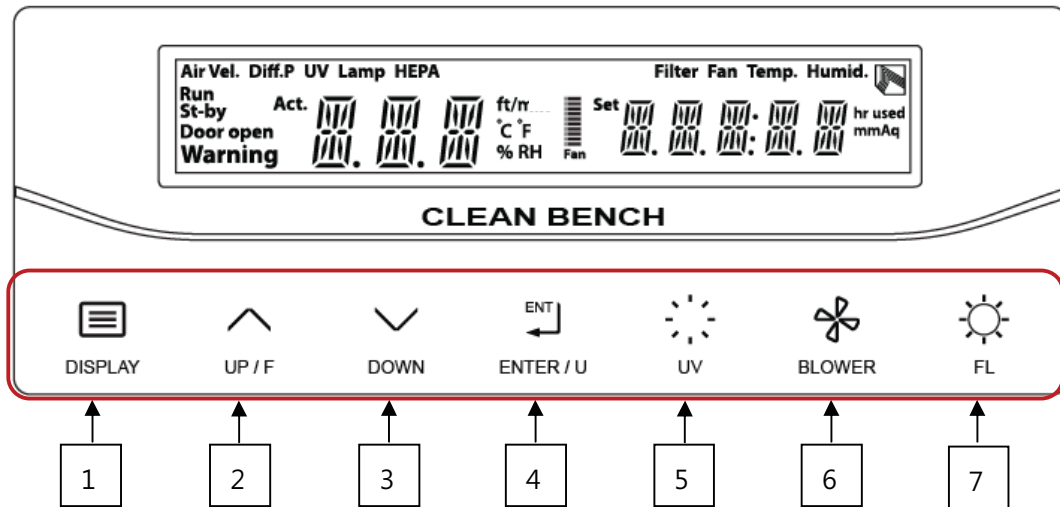
4.1.1. VFD(Vacuum Fluorescent Display): you can check the setting & control condition of machine.



A	Air vel.	Wind velocity of Blower
	Diff. P	Difference of pressure (top and bottom) in the HEPA Filter
	UV Lamp	<ul style="list-style-type: none"> UV lamp running efficiency of UV lamp check mode
	HEPA Filter	Efficiency of HEPA filter check mode
	Fan	Velocity indication or when you set the velocity, lights on
	Temp.	Present temperature indication
	Humi	Present humidity indication
B	Run	Blower runnig, running mode
	St-by	Blower stop condition, stand by mode
C	Door open	Door open condition
	Warning	<ul style="list-style-type: none"> When the door open over 20cm, warning When the HEPA Filter replacement time, warning When the UV lamp replacement time, warning
D	Act.	Present value
E	ft/min	Wind velocity unit (During the Blower running, if this unit indicates, the unit is ft/min, if not, the unit is m/sec.)
	°C °F	Temperature unit (Celsius/Fahrenheit)
	%RH	Relative humidity
	%	UV lamp strength and weakness of illumination – relative value compared with first illumination
F	Fan Level Bar	Blower Fan Power Level
G	hr used	<ul style="list-style-type: none"> operating time of Blower & UV lamp : 'hours : minutes used' indication total accumulation time of filter & UV lamp : 'hour hr. used' indication
	mmAq	Difference of pressure unit

4.1.2. Control button

It is capacitance method that enables touch recognition through a finger's static electricity and It has 7 buttons function as below.



1	DISPLAY	Temperature and Difference of pressure (1 time)
		Humidity and Difference of pressure (2 times)
		Return to basic screen (3 times)
2	UP	During the operation, increase the wind velocity of Blower In stand-by mode, go to the efficiency check mode for UV lamp
	F	Fahrenheit(°F) unit temperature
3	DOWN	decrease the wind velocity of Blower
4	ENTER	Input the setting value and implement
	U	during the operation of UV lamp, indication for UV lamp strength and weakness
5	UV	<ul style="list-style-type: none"> ▪ UV lamp ON/OFF ▪ UV lamp ON : bright orange, UV lamp OFF : green,
6	BLOWER	<ul style="list-style-type: none"> ▪ Blower ON/OFF ▪ Blower ON : bright orange, Blower OFF : green,
7	FL	<ul style="list-style-type: none"> ▪ Fluorescent lamp ON/OFF ▪ Fluorescent lamp ON : bright orange, Fluorescent lamp OFF : green

4.2. How to use the Fluorescent lamp and Door

4.2.1. FL (Fluorescent lamp)

FL button can do the lamp on or off as capacitance method that enables touch function with ON/OFF Toggle. During the UV sterilization, if you open the door, UV lamp will be off automatically and Fluorescent lamp will be on. Also when the Fluorescent lamp on with closed door and if you push the UV button, Fluorescent lamp will be off automatically and UV lamp will be on.

4.2.2. Door

(1) Smart Door System (UV sterilization mode)

This unit's sliding door was designed by connect to operation with UV, FL and Blower in UV sterilization mode concerning user convenience and safety. i.e. During the UV sterilization and if you open the door, UV lamp will be off automatically and Fluorescent lamp will be on with operating the blower. So you don't need to separate button controls.

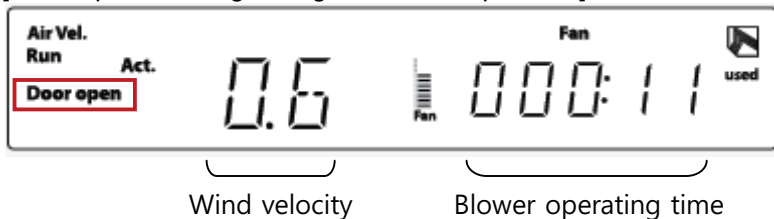
(2) Door Open Warning System

This unit has sensor for door open and shut so if you open the door stand-by mode or during the blower operation, 'Door open' will blink in VFD.

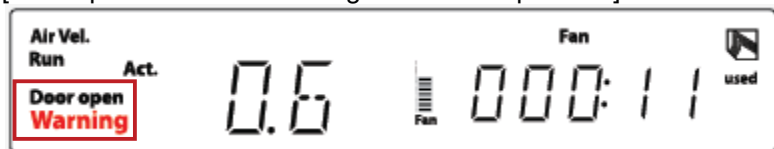
If the door open over 20cm, to warn the possibility of entering the pollutant by backwash, 'Door open' and 'Warning' will blink.

Below screen is 'Door open' warning during the Blower operation.

['Door open' warning during the Blower operation]



[Door opens over 20cm during the Blower operation]



CAUTION

When you open the sliding door strongly, it can be damaged.



To prevent your hand get jammed in door, please hold the handle.



When you open the sliding door, please mind that you do not open the door over 20cm from bottom surface.

It can be possible the entering of pollutant by backwash. Also please note that if you open the door too much, wind velocity can be decrease the entering of work

space.



Please open the sliding door as small as you need. If you open the door too much, it can be occurred problem like a increase in electricity and pollutant or reduce the life of filter because of the air entering the air flow through the filter increases.

Please set the machine level. If not, the door will not shut completely.

When you do not use the machine, please shut the door.

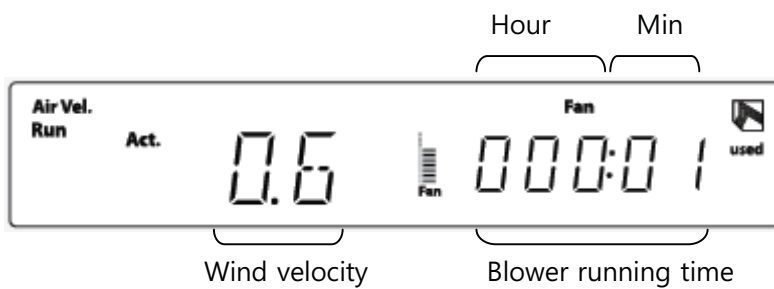
4.3. Blower

BC-H series can stabilize set wind velocity in a short time by adjusting the Inflow air volume entering the air flow through the filter when open to a different point about wind velocity to maintain the set of the air. You can operate the BLOWER to push the BLOWER button in stand-by mode or open the sliding door in UV sterilization mode (4.5.1).

Wind measurements of the unit from the bottom of the door when opening a workspace that is discharged to the outside through the door is based on the velocity of the air flow. Wind speed is displayed in the unit of the lower surface of the filter that KSM 9901 this provision is measured at 100mm is equivalent to about twice the velocity.

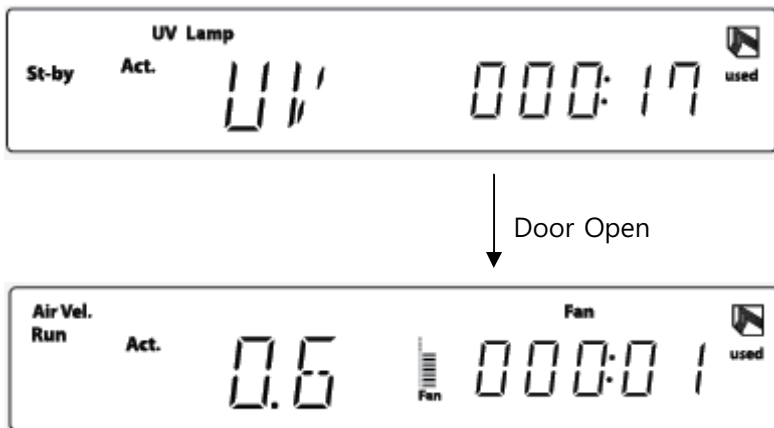
4.3.1. Operating the Blower in stand-by mode

You can operate the blower to push the BLOWER button in stand-by (St-by) mode. At that time, Blower will run as 0.6 m/sec automatically without wind set. It will take some time to approach the set wind velocity.



4.3.2. Auto operating the Blower in UV sterilization mode

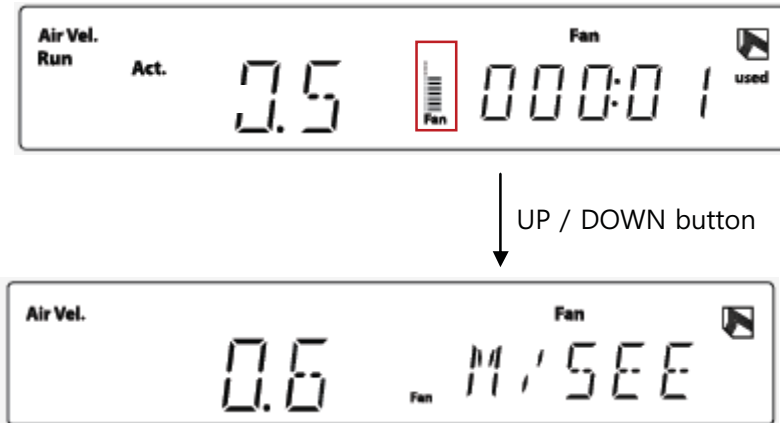
When in operation the UV lamp, the user of the control panel for ease of operation, only without the sliding doors open and can operate directly Blower. When you open the sliding door, UV lamp fluorescent lamp is turned off and the Blower 0.6 m/sec to work automatically.



4.3.3. Check the blower set wind velocity

Wind speed reached or during setting of the device in operation, UP or DOWN button to set the wind speed can be checked.

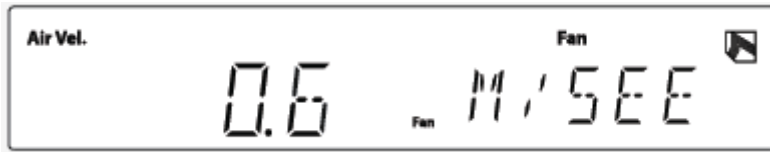
Wind set the screen automatically returns to operation after the check.



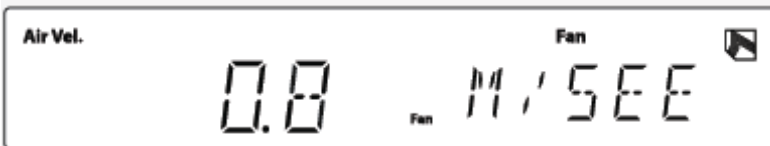
Blower operation is in the center of the screen in action Blower Fan Level Bar to display the Fan Power. Level consists of 10 steps of 10% represents a space. Setting a schedule for wind speed recorded in the open a lot of doors to increase air flow entering the increase of rotation speed of the Fan Power is increased.

4.3.4. Change the Blower wind velocity

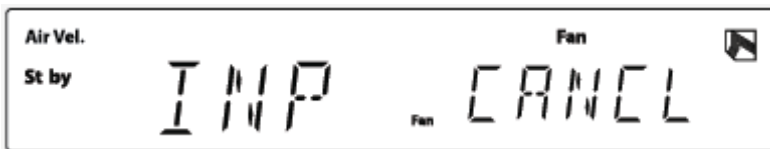
STEP 1 : Push the UP or DOWN button at one time.
Wind speed is displayed in the active Blower..



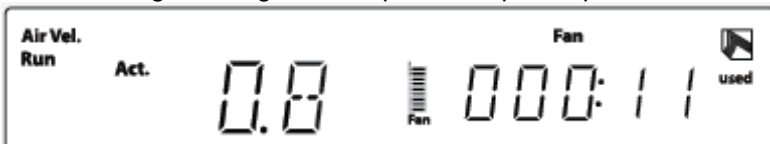
STEP 2 : Press the UP or DOWN button to change the wind.
You can set the 0.1 m/sec units from 0.3 to 1.0 m/sec.



If you do not push the ENTER button after changing the UP or DOWN button within 3 seconds, cancel screen will display and will return to the operating screen before the change.



STEP 3 : Press the ENTER button.
Blower setting is changed, the input wind speed operation.



At this point, the changed set value is not stored when you turn the main power off and on again.

NOTICE

- Maximum wind speed of the product (1m/sec) while the doors are closed Blower operation of the wind speed is 100%. So if the door is opened and even if you set the maximum wind speed, measured in the actual workspace and Display wind speed is lower than the 1 m/sec.

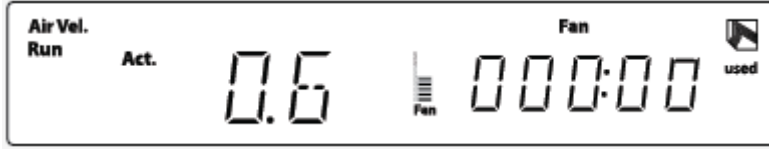
⚠ CAUTION

- Operate the unit for about 5 to 15 minutes after adjusting blower speed. After the air flow is stabilized, start your project.
 - Subject of experiment should be in the clean air which is 10cm away from the door. It is more protective to test experiment far from the door.
 - Do not place big stuff near any subjects. Arrange subjects of experiment in the best flow to smooth clean air flow.
 - Do not load any stuff high under the HEPA filter. It can interrupt inner air flow.
 - Be careful not to move your arms and hands to the outside during the project.
 - Isolate clean subjects and contaminated subjects. Place contaminated ones close to the door.
 - Arrange subjects of experiment to minimize the movement of contaminated subjects in the clean air.
 - Wear lab coats, protective gloves, goggles and mask for safe project.
 - Do not put any stuff upon the top of the unit which can block the Pre-filter. Also clean and maintain Pre-filter periodically.
 - Take extreme caution when you use flame, LPG gas or air. Turbulent air can be foamed when use of flame, LPG gas or air.
-

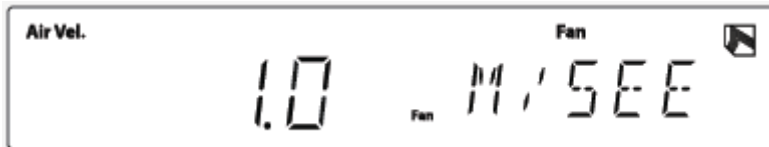
4.3.5. Procedure for operating blower at maximum

Before working, follow below steps to clean the work area.

STEP 1 : Press 'BLOWER' button to operate blower.
Blower will be operated at 0.6 m/sec.



STEP 2 : Set blower speed to max.(1.0 m/sec) by pressing 'UP' button.



STEP 3 : Press 'ENTER' button.
Set blower speed value(1.0 m/sec) is on the display and blower is operated at the max speed to eliminate contaminated air.



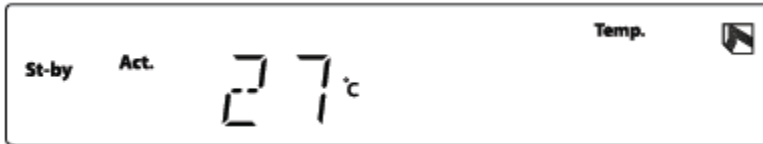
STEP 4 : After 10 minutes, press 'Blower' button to stop the blower and close the door.

4.3.6. Procedure for stopping blower

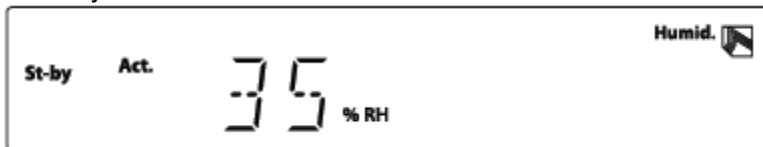
Press 'Blower' button during blower operation.

Blower stops and each screen as below is displayed for 3 seconds by turns and 5 times repeatedly. . (Refer to 4.6.1 Automatic monitoring on Temperature/Humidity)

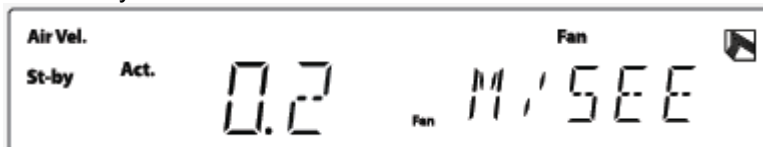
Temperature



Humidity



Air Velocity



After showing above screen 5 times repeatedly, stand by Air velocity screen.

If you want to reoperate blower, press 'Blower' button.

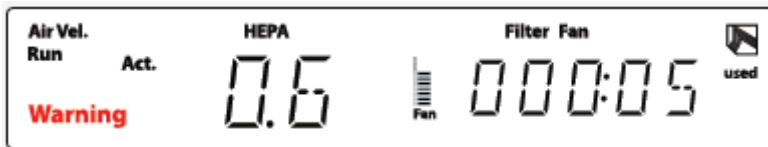
4.4. HEPA Filter

4.4.1. HEPA Filter performance check

This unit is equipped with digital differential pressure gauge to automatically check HEPA filter's performance.

(1) Self check function

If HEPA filter's differential pressure is over 25mmAq, warning sign is shown on display to let you know to change the HEPA filter.



NOTICE

- If HEPA filter's differential pressure is over 25mmAq, warning sign is shown on display to let you know to change the HEPA filter.
- Performance test should be practiced periodically. For example, particle count test every 6 months and air velocity test and leakage test annually. For Jeio tech's service contact, refer to 8.5. Service Contact.

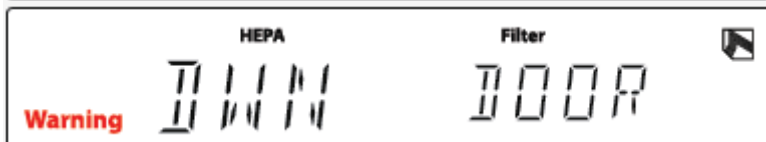
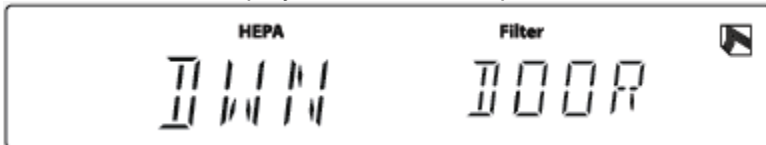
(2) User's self check

You can manually check HEPA filter's performance on stand by mode. When checking filter's performance, open the door up to 20cm high.

STEP 1 : Press 'UP/F' button on stand by mode.
'FLT' 'CHECK' are displayed on VFD.



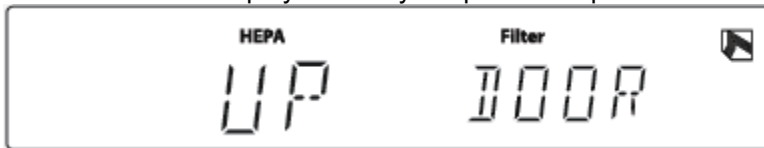
STEP 2 : Press 'ENTER' button.
'DWN' 'DOOR' are displayed if the door is opened.



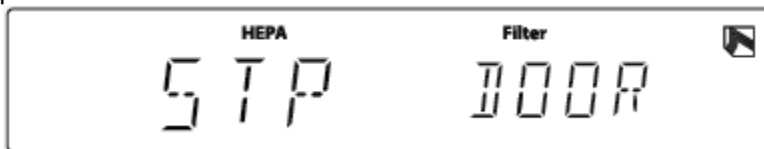
If door is closed, 'UP' 'DOOR' are displayed to let you open the door 20cm up.

STEP 3 : Close the door completely.

'UP' 'DOOR' are displayed to let you open door up to the level of filter performance check(20cm).



STEP 4 : 'STP' 'DOOR' are displayed to let you stop opening the door if the door is opened at the level of filter performance check.



STEP 5 : The unit automatically checks filter performance by operating blower speed at maximum for 10 seconds.

After checking, if filter performance is fine, then 'FLT' 'GOOD' is displayed, if filter needs to be replaced, then 'FLT' 'CHANG' is displayed with 'Warning' sign.

Filter in good condition



Filter in replacement need



After filter's condition shown, it returns to the temperature/humidity automatic monitoring mode (4.6.1).

NOTICE

If you do not press any button or open and close the door for 5 seconds during the process of STEP 1 to 4, Filter performance check is canceled and the screen goes back to the stand by mode.

CAUTION



HEPA filter is fragile. Please contact with us for replacement and maintenance.

Top of work area is HEPA filter, please take extreme caution for any shock and flame during work.

4.5. UV Lamp

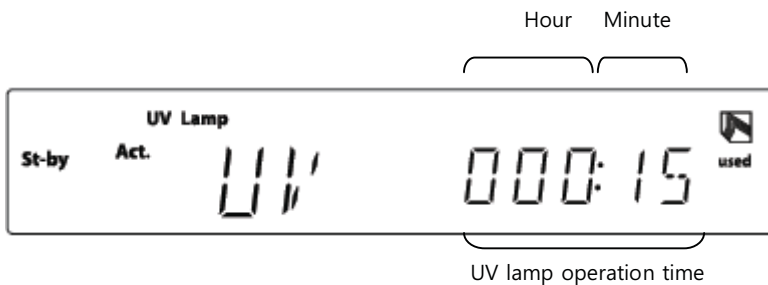
4.5.1. UV sterilization

When aseptic manipulation is required, turn on the UV lamp for a while to sterilize the inner clean bench before working. Press 'UV' button to turn lamp on when the door is closed and repress 'UV' button to off the lamp. For user's safety, UV button is not working while the door is open. If you try to press 'UV' button while door is open, warning alarm will be activated.

[UV sterilization mode]

STEP 1 : Close slide door.

STEP 2 : Press 'UV' button to turn UV lamp on.



STEP 3 : Press 'UV' button to off the UV lamp after work area is sterilized enough.

However, if you open the door when UV lamp is on, UV lamp is automatically on. However, if you simply open the door while UV-lamp is ON, door system will automatically turn OFF UV-lamp, turn ON Fluorescent lamp and Blower(0.6m/sec) instead of your manual control. (Refer to 4.2.2 Smart Door System)

When UV sterilization, you can operate blower by pressing 'Blower' button. Blower speed is automatically adjusted at 0.6 m/sec even when the door is closed.

CAUTION



Maintain the level of unit before turning UV lamp on. If the level is not alright, door can not be closed completely. In this case, 'UV' button is not working to prevent any leakage possibility. Although you close the door, if you see 'Door open' on VFD, then fix the level of the unit.

When UV sterilization, be careful not to hide any part that needs to be sterilized by any other stuff in that work area.

NOTICE

UV sensor automatically detects UV light intensity if you turn UV lamp on. If UV light intensity is lower than 80% after 2 minutes passes, UV warning lamp is automatically ON to let you know when to change UV-lamp. (Refer to 4.5.3)

UV lamp's average intensity is over 150 $\mu\text{W}/\text{cm}^2$ when first use.

UV lamp's minimum intensity for sterilization is 40 $\mu\text{W}/\text{cm}^2$ (Ref. 5.12 of NSF Standard 49)

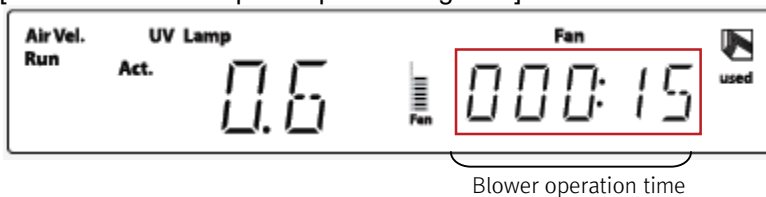
Minimum sterilization time depends on UV intensity. You can calculate UV intensity and sterilization time for sterilization condition check. Minimum UV dosage for sterilization is 30000 $\mu\text{W}/\text{cm}^2$.
 $\{ \text{UV dosage} (= \text{UV intensity} * \text{time}) > 30000 \mu\text{W}/\text{cm}^2 \}$

Ultraviolet line is the most powerful at 253 nm.

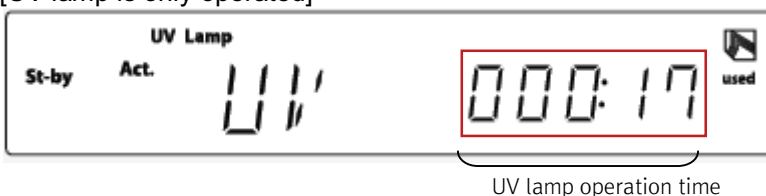
4.5.2. UV lamp operation time check

When the door is closed and blower is operated if you press UV button, blower and UV lamp are operated together. If only UV lamp is operated, the value shown on the right of VFD indicates UV lamp's operation time, but if UV lamp and blower is working together, the value shown on the right of VFD indicates blower's operation time. At this moment, if you turn off the blower, UV lamp's operation time is shown on VFD.

[Blower and UV lamp are operated together]



[UV lamp is only operated]



NOTICE

If blower and UV lamp are operated together, VFD indicates blower operation time.

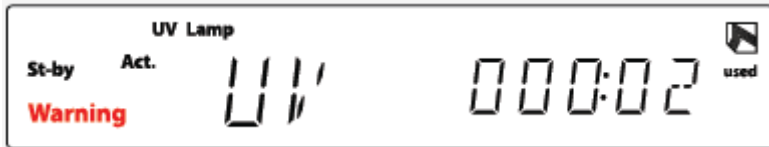
- Return Screen : Comes back to blower's operation screen.
- Operation time : Indicates blower's operation time.
- UV intensity : UV intensity is not displayed even if you press 'ENTER/U' button.

Stop the blower to check the condition related to UV.

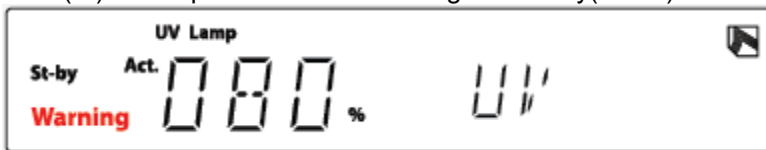
4.5.3. UV Lamp performance check

(1) Self performance check

UV sensor automatically detects UV light intensity if you turn UV lamp on. If UV light intensity is lower than 80% after 2 minutes passes, UV warning lamp is automatically ON to let you know when to change UV-lamp.



'ENTER/U' button to check the light intensity during warning alarm. UV lamp's light intensity is shown as relative value(%) in comparison with the first light intensity(100%).

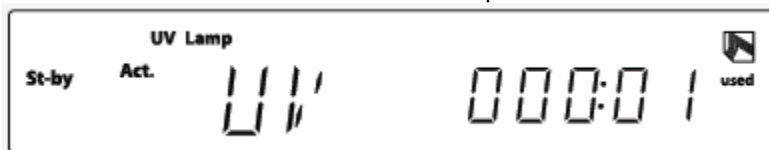


(2) User's check

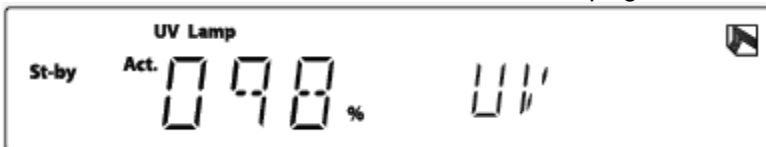
Press 'ENTER/U' button during UV lamp is on to check the light's intensity.

STEP 1 : Close the door completely.

STEP 2 : Press UV button to turn UV lamp on.

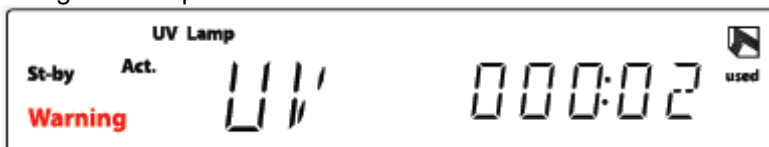


STEP 3 : Press ENTER/U button to check UV lamp light's intensity.

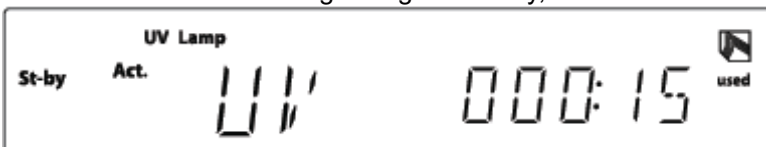


You can check the sterilization performance by the indicated UV lamp's light intensity. UV lamp operation time depends on the light intensity for sterilization. (refer to 4.5.1)

When UV light intensity is lower than 80%, UV warning lamp is automatically ON to let users know when to change UV-lamp.



After 3 seconds of indicating UV light intensity, the screen comes back to UV operation screen.



NOTICE

- The light's intensity value is shown to be low right after the display shows the UV lamp's light intensity, but the real light intensity will be shown in 2 minutes. This is UV sensor's characteristic to have stabilized after some time.
 - If UV lamp and Blower is operated together, even if you press ENTER/U button you can not check UV light intensity. Please turn off the blower to check the UV light intensity.
-

4.6. Check the temperature and humidity

This Clean bench is showed automatically inner chamber temperature and humidity condition. Also, this equipment is provided to check the current temperature/ humidity, and differential pressure value for user convenient when pressed “DISPLAY” button in the stand by condition.

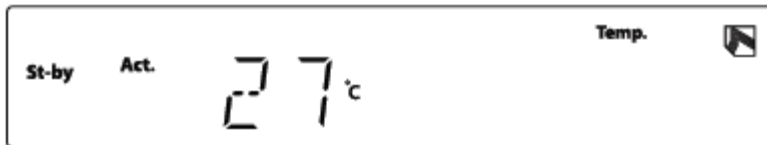
4.6.1. Temperature/Humidity automatic monitoring

Revert to temperature/humidity automatic monitoring function after check the temperature/Humidity during standby mode, blower stop and HEPA filter performance check

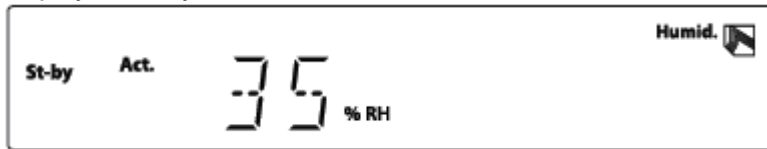
[Temperature/humidity automatic monitoring]

Repeated 5 times by each 3 seconds; temperature, humidity, and wind speed.

Display temperature



Display humidity



Display wind speed

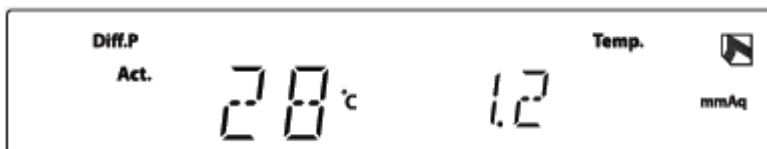


After 5 times repeat, stand by display wind speed status.

4.6.2. Check the temperature and unit conversion

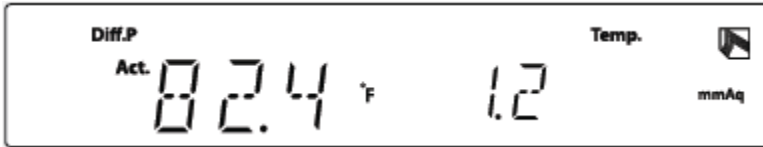
Step 1 : Press “DISPLAY” button 1 time.

Displayed Celsius (° C) temperature and differential pressure



Step 2 : Press “UP/F” button on Celsius (°C) temperature displayed screen.

Fahrenheit (°F) unit will be display



After temperature and differential pressure displayed 3 second, the screen will be return automatically.

4.6.3. Check humidity

Press “DISPLAY” button 2 times

Displayed relative humidity (%RH) and differential pressure.



After humidity and differential pressure displayed 3 second, the screen will be return automatically.

[Check the temperature and humidity in standby mode, after then return]

Return to the temperature/ humidity automatic monitoring (4.6.1)

[Check the temperature and humidity in operating mode, after then return]

Return to operating screen.



5.0 Maintenance

5.1. Inspection Interval

Classification	Inspection Interval				
	Daily	Weekly	Monthly	6 month	Yearly
General					
Power cord					
Power cord's connection with the unit	●				
Power cord's sheath condition	●				
Inner cleanliness	●				
Outer cleanliness		●			
System					
Pre-filter cleanliness		●			
Blower performance check		●			
Device self check of HEPA Filter			●		
HEPA Filter Particle count Test				●	
HEPA Filter Leakage Test					●
Check the UV Lamp condition		●			
Check the sliding door condition		●			
Power switch, VFD, Control buttons		●			
Check the wheels and stopper			●		
Gas valve			●		
Performance testing of equipment (Cleanliness, wind, noise, illumination, vibration)					●

5.2. Cleaning

Always make sure to keep the equipment and accessories clean. Dirt and other foreign substance can cause fire or electric shock. The surface should be cleaned weekly and the inner chamber should be cleaned daily. Before cleaning, disconnect the power cord from the power outlet and ensure that the equipment is cool enough.

5.2.1. Cleaning in case of pollutants during operation

Step 1 : Stop operation immediately and turn off the blower

Step 2 : In case of spilled is hazardous material, user should wear production equipment such as protective clothing, gloves, and glasses.

Step 3 : Carefully remove the spilled materials and residue for preventing additional contamination.

Step 4 : Contaminated test material and residue material should be disposed with prevent contamination process.

Step 5 : Clean the working surfaces by disinfect material.

Step 6 : Before resuming operation, user should operate (depending on contamination level) blower to 5~30 min for remove contaminants.

5.2.2. Clean the outside of unit

After removing the power plug, wipe by dry cloth lightly.

Check the upper pre-filter is contaminated by foreign substance, make sure clean or replace.

(1) General condition

Step 1 : Should wear chemical resistant gloves, and wipe the outside of unit by soft dry cloth with using neutral detergent.

Step 2 : Wipe the front of unit plastic part by soft dry cloth with using neutral detergent.

(2) Contamination condition

In case of contaminating unit by toxic chemical or toxic gas, please follow cleaning procedures;

Step 1 : Should wear chemical resistant and mask.

Step 2 : To clean slowly unit surface by soft dry cloth.

Step 3 : To clean unit surface by new soft dry cloth with neutral detergent.

5.2.3. Clean the inside of the unit

Step 1 : Remove stuff and facility from inside of unit.

Step 2 : Wipe the unit working surface and inside of walls by soft dry cloth with neutral detergent.

Step 3 : Also, wipe the using again facility by soft dry cloth with neutral detergent. But only wipe UV lamp and FL lamp by UV soft dry cloth without neutral detergent.

Step 4 : Make inside empty condition, Close sliding door and tune on the UV lamp to sterilize the inside.

Step 5 : Reset again using facility after sterilization by Autoclave, disinfectant, or UV lamp.

(In case of using UV lamp, should be sterilized several time without UV does not reach sterilized parts)

⚠ CAUTION

- Do not clean the unit by spreading water.



- Do not use chlorine bleach, detergents, abrasives, benzene, volatile substances, acids, or solvents.



- Do not clean with disassemble.

5.3. Accessory replacement

Switch the power off and disconnect the power cord before accessory replacement.

5.3.1. Pre-filter replacement

Pre Filter replacement cycle depends on contamination level in interlining place, but normally we recommend the pre-filter replacement cycle is 3 months.

When user wants to replacement pre filter, please request our company, branch, or seller with refer 7.1 accessory specifications.

5.3.2. HEPA Filter replacement

User can know filter replacement by HEPA filter performance check (4.4.1).

HEPA Filter replacement cycle depend on using time, contamination level in interlining place, but normally we recommend the HEPA replacement cycle is 2~4 years.

When user wants to replacement HEPA filter, please request our company, branch, or seller. And the filter should be installed by the qualified technician working

5.3.3. UV Lamp replacement

The equipment will be showed UV lamp replacement time by automatically UV radiation intensity measurements (4.5.3)

When user wants to replacement UV lamp, please request our company, branch, or seller. User should replace standard UV lamp refer 7.1 accessory specifications.

5.3.4. FL Lamp replacement

The FL lamp does not working because of spend all life, and the intensity of illumination is less than constant value (650Lux, KS M 10103 standard). Please replace the FL lame for smooth operation.

Please refer 7.1 accessory specifications and replace the correct standard FL lamp.

5.3.5. Fuse replacement

In case of the equipment main power is gone because of blown fuse, please replace fuse.

The each equipment is included 1 spare fuse to use replacement. When user need to replace, please use it. If user want to use additional fuse, please refer bottom chart and request our company, branch, or seller.

Model	Voltage	Current consumption	Fuse
BC-01H	250V	1.36A	10A
BC-01H	250V	1.70A	10A
BC-21H	250V	2.27A	10A

5.4. Relocation and Storage

(1) When movement, disconnect the power cord from the power outlet

(2) Pack the equipment and accessories into the original packaging or any other suitable container before moving.
Raise caster's stopper for moving

(3) If you don't use this equipment for an extended period of time, disconnect the power cord from the power outlet and clean the equipment with soft cloth. Pack the equipment properly and make sure to store it in dry place.

CAUTION

- Disconnect the power cord from the power outlet when the equipment is not use for long time.
 - Do not move the equipment by the power cod connected.
 - Pay attention to avoid mechanical shock or vibration while moving the equipment. Damages caused by mechanical shock or vibration may result in injury or fire.
-

6.0 Troubleshooting

6.1. Troubleshooting

Please follow below guidelines for troubleshooting. For problems which are not listed below, contact with your local agent or Jeiotech for service.

6.2. Power Troubles

Symptoms	Causes	Solutions
The equipment is not on	The plug is not inserted completely	Put a plug into the socket again.
	Socket/plug/power lines are damaged	Check the socket/plug/power lines and replace with new one if they are damaged.
	Wrong electric standard	After check the ID plate on the unit whether it is fit to the socket power, supply proper voltage and frequency for the power.
	Circuit breaker is off or power failure	Check if the power is off. If the circuit breaker is off, fix it and operate the equipment again.
	Fused are disconnected.	Open electrical wiring panel to confirm fuse's breakage and replace the included fuse
	Inner circuit malfunction	Request service.
Circuit breaker is often shorted	Too many plugs are connected	<ol style="list-style-type: none"> 1. Check the voltage capacity supplied t the circuit breaker. 2. Check many similar types of equipment are connected on the socket. Use separate socket not exceeded of voltage capacity.
	Inner circuit malfunction	Request service.

6.3. Operation Troubles

Symptoms	Causes	Solutions
Blower does not rotate	Do not press button (or press 2 times) on control pnel.	Check the lamp color is change or not when you press Blower button. (stand by :green, operating: light orange)
	Blower Motor malfunction	Request service.
	Inner circuit malfunction	Request service.
Heavy noise during Blower operating	Full of life because of HEPA Filter clogged.	Check the HEPA Filter condition (refer 4.4.1) and request replacement
	Blower Motor malfunction	Request service.
Unit vibration	Blower Motor malfunction	Request service.
Do not operate FL lamp, UV lamp or blink	Full of life the FL lamp, UV lamp.	Request service.
	Inner circuit malfunction	Request service.
Contamination in the clean bench	Incomplete disinfection and operation, improper surroundings and work environment	Work environment and to track the cause reorganization process.
	Weak intensity germicidal UV lamp	After check the UV lamp disinfection intensity (refer 4.5.3), adjust disinfection time or replace the UV lamp.
	HEPA Filter damage, or over lifespan.	Validation or request service forreplace.
Door operating malfunction	Even close door, displayed “door Open”	Horizontal align correctly.
	Internal parts malfunction	Request service.
VFD panel malfunction	Component damage by external force, medicine, or temperature overheating.	Request service.

7.0 Accessories

7.1. Accessories

Designation	Model	Order No.	Description
Pre-filter	BC-01H	AAAB1611	966 X 359.5 X 20 mm
	BC-11H	AAAB1612	1266 X 359.5 X 20 mm
	BC-21H	AAAB1613	1866 X 359.5 X 20 mm
HEPA Filter	BC-01H	AAAB1601	965 X 460 X 85 mm
			21.5 CMM at 25.4 mmAq
	BC-11H	AAAB1602	1265 X 460 X 85 mm
			28.2 CMM at 25.4 mmAq
	BC-21H	AAAB1603	1865 X 460 X 85 mm
			41.6 CMM at 25.4 mmAq
UV – C Lamp	BC-01H(230V)	AAAB1631	-
	BC-01H(120V)	AAAB1632	-
	BC-11H(230V)	AAAB1633	-
	BC-11H(120V)	AAAB1634	-
	BC-21H(230V)	AAAB1635	-
	BC-21H(120V)	AAAB1636	-
Stand with Casters	BC-01H	AAAB1621	-
	BC-11H	AAAB1622	-
	BC-21H	AAAB16233	-
Gas cock	All models	AAAB1561	-

7.2 Accessory setting and replacement

Refer to 5.3 Accessory replacements

8.0 Appendix

8.1. Technical Specifications

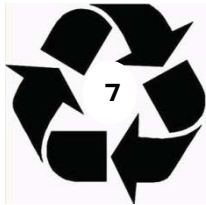
Model		BC-01H		BC-11H		BC-21H	
Air	Airflow Type	Vertical Laminar Flow					
	Pre-filter	Polyester Fibers with an Efficiency of 85% (AFI TEST)					
	HEPA Filter	Typical Efficiency of 99.99% at 0.3 μ m					
	Airflow Velocity Setting / Control range (m/sec)	0.3 ~ 1.0 (0.1 step)					
	Airflow Velocity* ¹⁾ (m/sec/fpm)	Feedback Control* ²⁾					
Noise Level (dB)		< 65					
Dimensions	Internal (W x D x H, mm/inch)	945×570×670/ 37.2×22.4×26.4		1245×570×670/ 49.0×22.4×26.4		1845×570×670/ 72.6×22.4×26.4	
	External without Stand (W x D x H, mm/inch)	1135×647×1150/ 44.7×25.5×45.3		1435×647×1150/ 56.5×25.5×45.3		2035×647×1150/ 80.1×25.5×45.3	
	External with Stand (W x D x H, mm/inch)	1135×647×1870/ 44.7×25.5×73.6		1435×647×1870/ 56.5×25.5×73.6		2035×647×1870/ 80.1×25.5×73.6	
	Weight (Body)(kg/lbs)	140/308.6		185/407.9		225/496	
	Weight(Body+Stand) (kg/lbs)	170/374.8		215/474		255/562.2	
	Sliding Door Max Opening (mm/inch)	450		450		450	
Light	FL (W)	30 x 2ea		30 x 2ea		32 x 2ea	
	UV – C (W)	25 x 1ea		30 x 1ea		25 x 2ea	
	Fluorescent Lamp Intensity (Lux)	> 650					
System	Function	Smart Door System HEPA Filter Auto-check					
	Warning	UV Lamp Replacement Warning Door open warning (above 200mm)					
	Control Panel	Dual Display with Vacuum Fluorescent Display (VFD) and Touch Keys					
Internal Electric Socket Inlet		230V Socket					
Electricity	Electrical Requirement (230V,A)	60Hz/1.25	50Hz/1.38	60Hz/1.57	50Hz/1.73	60Hz/2.09	50Hz/2.30
	Electrical Requirement (120V/60Hz,A)	2.62		3.27		4.36	
Material	Main Body	Epoxy Powder coated Steel					
	Working Surface	STS 304, Hairline Treatment					
	Front Sliding Door	UV absorbing tempered Glass (Thickness : 5.0t)					
Permissible Environmental Condition		Temperature 5°C to 40°C, Relative Humidity 10% to 80% Altitude up to 2,000m					

*1) Airflow velocity is measured at 100mm below the filter face.

*2) Airflow velocity near the working area is over 0.6 m/s.

8.2. Equipment Disposal

Disposing of this equipment must be done in an environmentally responsible way if it has been potentially exposed to bio-agents or radioactive samples. Failure to follow stringent requirements for equipment disposal may lead to actions against you and your organization.



First, check with your laboratory or organization to ensure that you are following all the policies and procedures for disposal of laboratory equipments.

If not possible, contact your local governing body for regulations regarding disposal of laboratory equipments. Jeio Tech highly recommends you to find a local service provider that can properly dispose of your instrument.

8.3. Warranty

8.3.1. General

The warranty period of twelve four (24) months, covering for defects in workmanship and material when used recommended conditions, as set forth in the operating manuals for such equipment.

8.3.2. Warranty exception

This warranty does not cover any unit even under warranty period.

Fire, water, power outage, power surge, lighting, or other acts of nature.

Damage as the result of not following operational voltage.

Abuse, misuse, neglect, accident.

Surface damage as the result of organic solvent such as thinner, benzene.

Damage as the result of not being complied by manual.

Improper application, repair or attempt repair not authorized by Jeio Tech.

Damage as the result of user's mistake.

8.3.3. Service request

Please fill out and submit the form with below information included for immediate service.

Date of purchase

1. Date of purchase
2. Name / Address / Phone / E-mail
3. Serial Number(refer to the ID plate on the side of the unit)
4. Damage condition

8.4. Technical assistance

➤ **International Sales Head Office (Korea)**

#1005, Byucksan Digital Valley 6-Cha, 481-4 Gasan-Dong, Geumcheon-Gu, Seoul 153-704, Korea

Tel: +82 2 2627 3816 **E-mail:** overseas@jeiotech.com

FAX: +82 2 3143 1824

➤ **The Americas (U.S.A. Branch)**

19 Alexander RD Unit 7, Billerica MA 01821, U.S.A.

Tel: +1 781 376 0700 **E-mail:** info@jeiotech.com

FAX: +1 781 376 0704

➤ **Europe (U.K. Branch)**

Unit 3, Tower Industrial Park, Chalgrove, Oxfordshire, OX44 7XZ, United Kingdom

Tel: +44 1865 400321 **E-mail:** labcompanion@medlinescientific.com

FAX: +44 1865 400736

➤ **China (Shanghai Branch)**

A-2113 Oriental International Plaza, 85 LouShanGuan Rd, Changning District, Shanghai, China
200336

Tel: +86 21 3251 1086 **E-mail:** longjuncao@jeiotech.com

FAX:+86 21 3251 1083

➤ **South East Asia (Malaysia Branch)**

No 57-59, Jalan Adenium 2G/6, Pusat Perniagaan Adenium, 48300 Bandar Bukit Beruntung,
Selangor Darul Ehsan , Malaysia

Tel: +60 3 6021 6880 **E-mail:** lcomp99@pojaring.my

FAX: +60 3 6021 7880

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