

# SWGC



## *Plant Growth Chamber*

### Operating Manual

written for  
SWGC-450 & SWGC-1000

**witeg Labortechnik GmbH**

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## 1 Introduction

Thank you for purchasing the **SWGC Plant Growth Chamber**.

This manual describes the performance and usage instructions of the product, and the precautions in the handling. Please carefully read this manual, before using the product.

The following warnings should be strictly adhered to: (The following warning sign is marked in the part that is required user attention, so please safely use the product after being well-acquainted with the meaning.)

## 2 Safety Instructions

### 2.1 Description of symbols



#### Warning

Failure to follow the instructions may result in injury.



#### Caution

Failure to follow the instructions may result in product failure.



#### Notification

Do not disassemble or modify the product or use it for purpose other than its intended function.



#### Caution: High Temperature

High-temperature heating, pose a risk of burns.



#### Danger of Explosion

If volatile, explosive chemicals are used, there is a danger of explosion.



#### Proximity Caution

Keep clear of the product during use

### 2.2 Instructions

For a safety and faultless using of the device it is indispensable that you read the following instructions purposely and follow them by the use.



- Connect the device only to the suitable power supply. Please have a look to the identification plate.

- Use the device only in electric circuits with ground fault circuit interrupter.
- Check the power supply cord before you stick it into the electrical outlet.
- Do not use power bars to extend the power supply cord.
- Only use extension cables with sufficient cable cross section.
- Do not touch the device with wet hands during the usage because this might cause an electrical shock.
- If unexpected sound, smell or smog is generated by the device, pull out the main plug and contact the manufacturer or your supplier immediately.
- Disconnect the power supply plug before cleaning or maintenance.
- If you use radiation or contaminated samples the responsibility is only up to you.
- If the installation place was moved, do not connect the power immediately. It should be connected at least 30 minutes after moving. If you use this product immediately after moving, it may cause failure of the critical parts relevant to the freezer.
- If unusual noise or signs of abnormal behavior are found during use of this product, please immediately contact the supplier or **Witeg Labortechnik GmbH** after turning off the power supply and disconnecting the power line.
- When moving the product, please move it so that the power cord is not damaged after disconnecting the power plug from the electrical outlet. **It may cause electrical shock or ignition due to damage to the cord.**



- Do not put heat-sensitive items on the device.
- Warn all attendees if you leave the device unattended.
- Pay attention when you lift up the lid, hot condensation water may drop down or hot steam could come out.
- Do not clean the scorching device.



- Repairs and amendments should only be made by **witeg** authorized people. Contraventions exclude the warranty.



- Use this device only if you read the whole safety instructions.
- This device should only be used by persons who are familiarized with safety instructions made for laboratories.
- Pay attention that no liquid reaches the controller or inward of the capsule.
- You have to keep the device clean if you want to get a longer life of it.
- Wear corresponding protective work clothing during the usage.
- Pull out the power cable if you didn't want to use the device for a longer time.
- Please, do not put bottles or cans into this product. If the contents in the can or bottle are expanded, it may cause the injury.

- Please do not put commercial bag-type coolants (including ammonium nitrate, urea) into this product. If the contents are leaked, it may cause rust and a malfunction.
- Please do not put goods or water containers on this product. If they fall down, people can be injured, or it may cause poor insulation and short circuit by water overflow.
- Please do not touch the samples or the containers in storage (especially metal goods) with wet hands or bare hands. Your hands may suffer frostbite. Please work after wearing gloves for low-temperature use.
- When moving or installing the product, please do not move it when it is lying down. It can cause malfunction. If you move this product when it is tilted or lying down, please operate it after letting it be stable for approximately 24 hours.



- Make sure that the device can not slip away.
- The device could get damaged if the vibrations are too strong.
- To avoid heat congestions or fires make sure that there is enough space for air circulations.
- Avoid direct solar radiation.
- Do not use the device near highly combustible materials.
- Do not set the device outdoors.
- It is superiorly to set the device in a good illuminated place to avoid accidents engendered by handling errors.
- To set the device in wet or dusty places could cause overheating, short circuits or fires.



- Do not use this device in areas with potentially explosive atmosphere.

### 3 Packing content

quantum	denomination
1	<b>SWGC Plant Growth Chamber</b>
<b>SWGC- 450 x 4</b> <b>SWGC- 1000 x 8</b>	<b>Teflon Coated Steel Shelves</b>
1	<b>Water Tank</b>
1	<b>Lux Meter</b>
1	<b>Silicon Tube</b>
1	<b>operating manual</b>

## 4 Product description

### 4.1 Key features

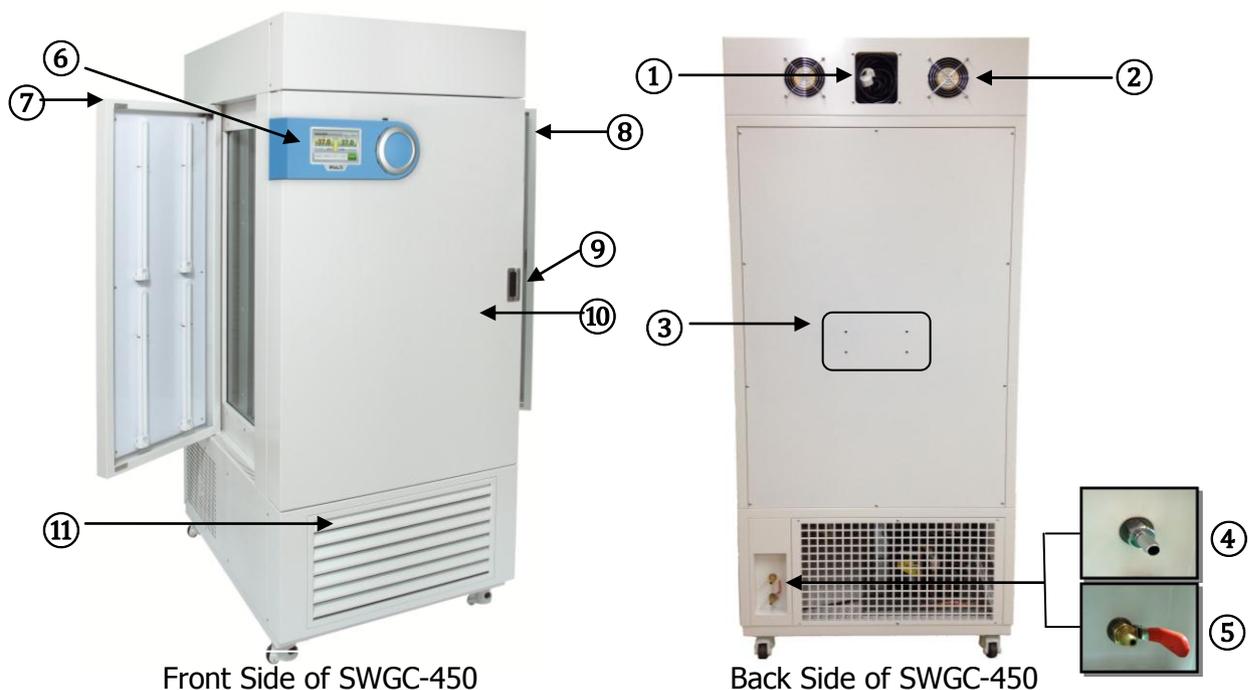
This product is an air circulation-type constant temperature and constant humidity growth box equipped with optimal constant temperature and constant humidity controller, and the air circulation fan mounted on it is designed so that it can control the constant temperature and humidity inside the chamber by implementing a low-noise design. In addition, it remotely controls the experimental equipment by building Smart-Lab™ System through WiRe™ App &

web Service, and it is implemented so that anytime, anywhere can be monitored.

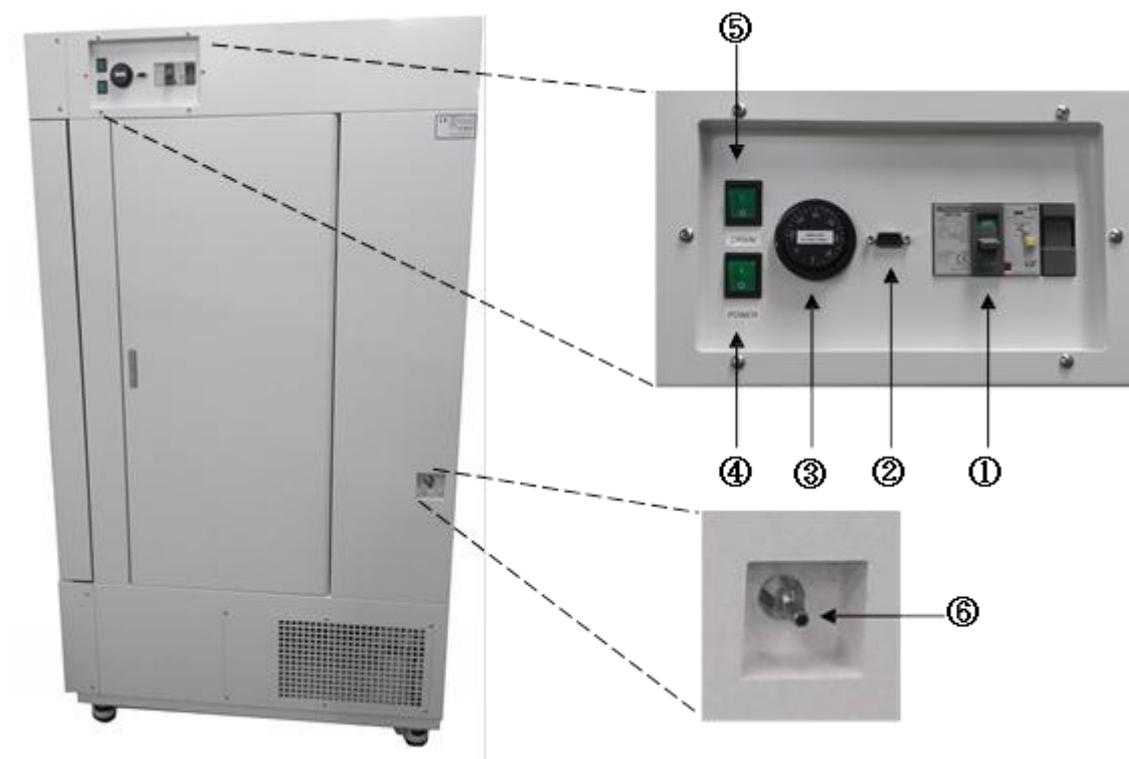
This product was developed and manufactured considering the best possible ease for use and safety, and has the following features.

- Because LIGHT BANK System is mounted, the lightness of light can be adjusted up to 0~12,000 (SWGC450) /0~15,000 (SWGC1000) Lux in 8 steps and can be implemented in a variety of conditions.
- The actions of various menus have been simplified through 7 inches Full-Touch Screen by applying Smart-Lab™ Controller.
- It sends the unusual condition in real time by the self-testing system of the experimental equipment through WiRe™ App & Web Service support over the user and the service center, and the remote monitoring and control are possible.
- It has been designed so that the Chamber and the internal environment are uniformly maintained by installing the forced circulation fan of the gas dynamic structure.
- Because digital PID controller is built-in, precision temperature, humidity and the intensity of illumination are adjustable.
- In order to maintain the perfect tightness, Stainless Steel is used as the material of the Chamber.
- The overheating on the surface of the instrument is prevented as much as possible by using the advanced insulator.
- It is easy to observe the experimental status inside the Chamber through the built-in tempered glass.
- The Graphic display with high resolution can check data, and also data back up and program updates are possible through USB port.
- The constant and accurate growth environment is composed by maintaining the relative humidity from 30% up to 95%.
- The setting value of temperature, illuminance and humidity can be used in the repeated experiment of the maximum 999 Cycle by setting the program.

#### 4.2 General survey



NO	Names	Description
①	Power Connection	Power Cord Apply
②	Circulation Fan	Forced Convection of Air
③	Water Tank Installation	Point of Water Tank Shelf Installation
④	Overflow Drain	Drain of water when overflow it in tank or Temp. controlled between 10 with 14°C in the chamber.
⑤	Drain	Drain for water by manual
⑥	Controller	Full Touch-Screen TFT LCD
⑦	Left Door	Left Door which has light system.
⑧	Right Door	Right Door which has light system.
⑨	Door Knob	Door open and close
⑩	Front Door	Front Door which has light system
⑪	Air Inlet	Air Inlet for Condenser



NO	Names	Description
①	Leakage Breaker	Leakage Breaker for safety
②	RS232 connection	Serial Interface for Remote control by PC
③	Safety Switch	Prevent overheat
④	Power Switch	Power ON/OFF
⑤	Drain Valve Open Switch	Open operation Switch of Drain Valve
⑥	Water Feed	Inlet of Water

### 4.3 Operating surface



NO	Names	Description
①	Set temperature	Controls and checks temperature
②	Current temperature	Indicates current temperature
③	Set humidity	Controls and checks humidity
④	Current humidity	Indicates current humidity
⑤	Set illuminance	Controls and checks illuminance
⑥	Current illuminance	Indicates current illuminance
⑦	START/ STOP	Controls operation starts and stops
⑧	Program Mode control	Sets programs and controls operations
⑨	OFF	Set compensating temperature values
⑩	CHART	Monitors operational status in graph
⑪	SETTINGS	Sets various functions of device
⑫	WiFi connectivity	Indicates internet connectivity
⑬	Date	Indicates current date, time, operation hours
⑭	Operation Information	Indicates operation information
⑮	Operation ON/OFF	Indicates ON/OFF in operation with icons

	Humidity control ON		Humidity control OFF		Device operating ON		Device operating OFF
	Comp 1 ON		Comp 1 OFF		Heater ON		Heater OFF

## 5 Positioning the device and commissioning

### \* Caution of Installation

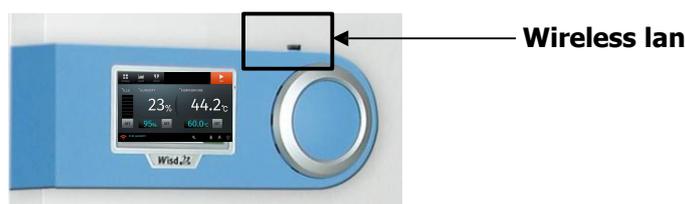
1. Please be careful when transporting the product because it is heavy.
2. Please do not lay the product on the floor or subject it to shock. It can cause damage inside the product.
3. Please install the product in a hard, flat, and stable place.
4. Please do not install the product in a place where it is exposed to direct sunlight, or in the dangerous places.
5. To minimize the risk of short circuits, do not install the product (in the) places where it will be subjected to the inflow of moisture or organic solvents on the regulator part or inside of the body.
6. This product was manufactured for normal operation at a rated voltage, so please check the voltage status before installing the product.
7. When installing and using the product, please certainly use the power cord provided with the products.

### \* Installation Process

1. After receiving the unit and locating it in the specified location, remove the packaging.
2. Check the unit for any transport damages. If any such damages are found, please contact the deliverer of the product.
3. The product should be positioned in a location where it has enough space for ventilation and prevention from fire. The recommended distance of each side is minimum 20cm from the back wall, 100cm from the side walls and ceiling respectively.
4. Place the device on a level, horizontal surface to support the capacity of the device without Vibration.
5. Once the unit is placed in its installation location, let the unit stand for 15-30 minutes so that all the internal parts of the unit stabilize.
6. Connect the power cord to the wall socket.
7. When installing the device, insure the wall socket is easily accessible.
8. Do not earth to gas pipe, plastic tap water pipe or phone line. It may cause an electrical shock, a fire, breakdown or explosion of the unit.

## 6 Installation of WiRe™ App & Web Service

- After installing this product in a static position, the user who uses WiRe™ App & Web Service, please use this product after installing WiRe Service before using the product installed.
- This installation is progressed on the regulator of front panel of the product.
- Because the Wireless LAN for using the internet is not installed in the product when shipping it at the factory, please connect by finding the wireless LAN among the components of the product.



- This describes how to install WiRe™ Service.  
It only describes items that must be installed to use WiRe™ Service. Please refer to “How to use” page for more product operation details.
- It is described the procedure how to set WiRe™ Service in order in installation. Please follow the steps in order as described.
- Proceed to connect WiRe™ Service in “SETTING” menu on the top left of main screen.
- “SETTING” menu is disabled during operation. Stop operating it by touching “STOP” button on the top right and check if the SETTING menu is activated.



- “System”, “WiRe”, “WiRe Users” are specific menu items to connect WiRe™ Service in “SETTING”. Proceed in order of description numbers as shown below.



- Proceed to set the system after pressing “System”. When you touch the return button on the top right of screen in all menu screen, it switches to the previous screen.

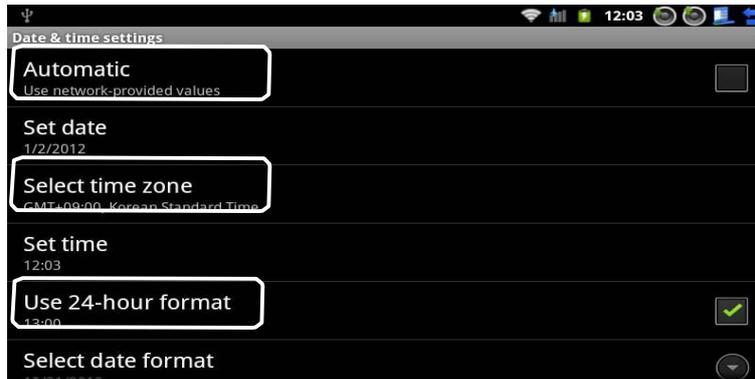
① **System Settings**



**(1) Current Time Set**

- Set the current time to enter the exact time of test by users. Touch the date time box on the right.

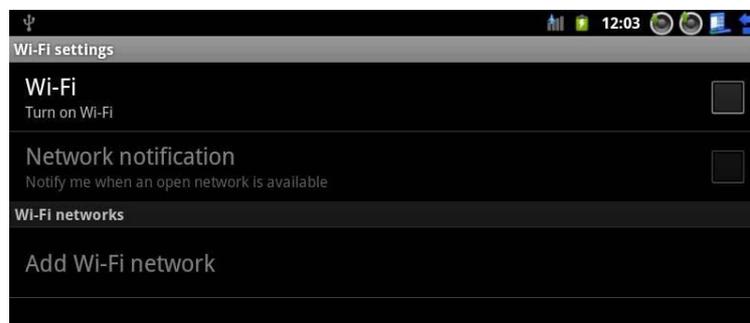
- If you randomly change the current time since supplied from the factory, please be sure to use after re-applying power to the equipment. If you have changed the time of product behavior it may also cause problems with some functions. Therefore if the current time changed be sure to use the device again after turning it off.
- Please use "Automatic" only with the Check Box is unchecked and disabled.
- "Select time zone" synchronizes to the time of a country if WiRe™ Service is used as a Mobile App that is using the device. Make sure to enter the country wherein a device is being used.



- For "Use 24-hour format", make sure if it is checked as shown on the right for the precise operation of device and never change it.
- After setting, it switches back to the previous page if the blue return icon on the top right is clicked.

## (2) Wifi Setup Set

- WiRe™ Service is possible to use only if connected to internet. Be sure to connect to a wireless LAN.



- Connect to WiFi by clicking Check Box on Wi-Fi window, and enter password if it requires. Be sure to check if USB dongle is properly installed if WiFi signal is not available (check flashing LED light).
- After connecting to WiFi, it switches back to the previous page if the blue return icon on the top right is clicked.

## ② WiRe Settings



- If WiRe Mode button is set to the right, WiRe™ Service is connected. It is possible only if WiFi connection is stable.
- WiRe Mode is not possible if WiFi is not connected or network is unstable. Make sure the network is stable.
- It is possible to check Serial Number, Model, and Organization Name at below after connecting it.

③ **WiRe Users**



**(1) Adding users**

- If a user is registered in the existing Smart-Lab device, this device will register the existing user IDs. In such cases, a single user can check several devices for the list of registered devices emerges when logged in with a single ID from a mobile App.



**(2) Deleting users**

- Users are deleted when the button is touched after selecting users to delete from the user list.

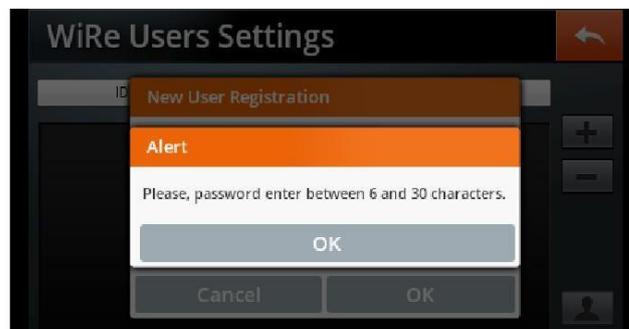


**(3) Registering new users**

- First-time users for Smart-Lab and WiRe Service must register user information. Enter ID, Password and Name.
- ID must be entered in at least more than 6 and less than 20 lowercase alphabetic characters and digits. In cases of duplicate ID or less than 6 or more than 20 places other than

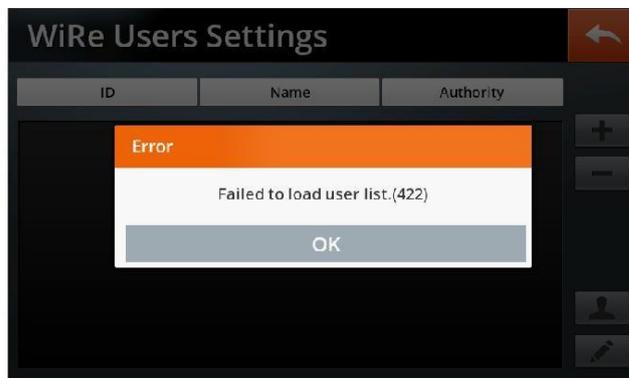
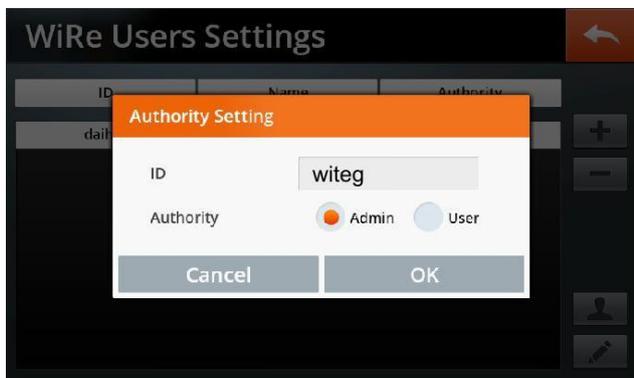
lowercase, uppercase alphabets or numbers are entered, a pop up message will be shown alerting the ID setting is not allowed.

- Password must be entered in at least more than 6 and less than 20 capital, lowercase alphabetic characters, special symbols. If not at least more than 6 and less than 20 capital, lowercase alphabetic characters, special symbols are entered, a pop up message not allowing registering will appear.
- ID, Password, Name once entered is not possible to change.



#### (4) Authority settings

- Set a registered user as an administrator or end user. Admin (administrator) controls Remote Control System as a single administrator. Up to 100 User (general user) can be registered and can monitor the status of device. (User can not remotely control)
- After selecting an ID that wants to change authority from the registered user list, set and select from Admin or User.
- Since only one Admin is allowed, Admin ID other than the latest ID will be changed to User.



- If a message that it cannot load registered user information pops up, check if WiFi connection is weak and reenter in WiRe Users menu.
- After proceeding to the steps above, WiRe™ Service is ready to use for it is connected to a Mobile App. Please refer user's manual for setting device functions.

## 7 Product Usage

### 7.1 Installation Method of Water Tank before using the Product



- Check the position of the Water Tank Shelf in the back of the product.
- Firmly fix the Valve on the Water Tank.
- A Tap is on the Water Tank, so turn the Valve to the Tap by your hand.
- Lock the Valve secured to the Water Tank by turning to the right, and open the lid of the Water Tank and fill with water into the Water Tank. ( If turn right the Valve : Valve Closes, If turn left the Valve : Valve Opens)
- Position the Water Tank on the Water Tank Shelf.
- Insert the Tube into the Valve. Be careful so that the Tube does not tear during inserting.
- Insert the Tube into the Water Feed.
- Open the lid of the Water Tank, and turn the Valve to the Open position.
- When the installation of the Water Tank in the product is completed, turn the Main Power Switch to On, after checking whether there is leak or not.
- When the power of the product is turned on, water is flowed into the humidification bath.
- When the humidification bath is filled with water, the Water Level Indicate Lamp will be flashed.
- Always be careful so that the Water Tank is not emptied while the product is operating.
- If turning ON the power of this product, please turn ON the Main Power Switch after

turning ON the Leakage Breaker located at the bottom of the rear panel.

- On the contrary, if turning OFF the power of this product, please turn OFF the Leakage Breaker after turning OFF the Main Power Switch.
- Prior to perform the operation of the product, the SAFETY Knob should be set up about 20~30°C higher than service temperature.
- Please operate after at least one minute when you turn the power ON again after turning the power OFF.
- This product is equipped with the security setting so that the important menu is activated when entering the password in order to protect the user's setting information. The default password is "0000", and it is recommended to use after changing it.
- Please check that the internal shelf is properly installed before the first operation.
- Please set to OFF of Drain Button Before the first operation.

## 7.2 TEMPERATURE setting and operation

- You can set the temperature by entering the number directly on the Temperature Setup screen by pressing “SET” button on the right where the set temperature is shown.



- You can set the temperature at a 1°C increment and can set between 10°C to 60°C. Press “ENTER” after entering the set temperature. It returns to the main screen when the set temperature is applied.

## 7.3 HUMIDITY setting and operation

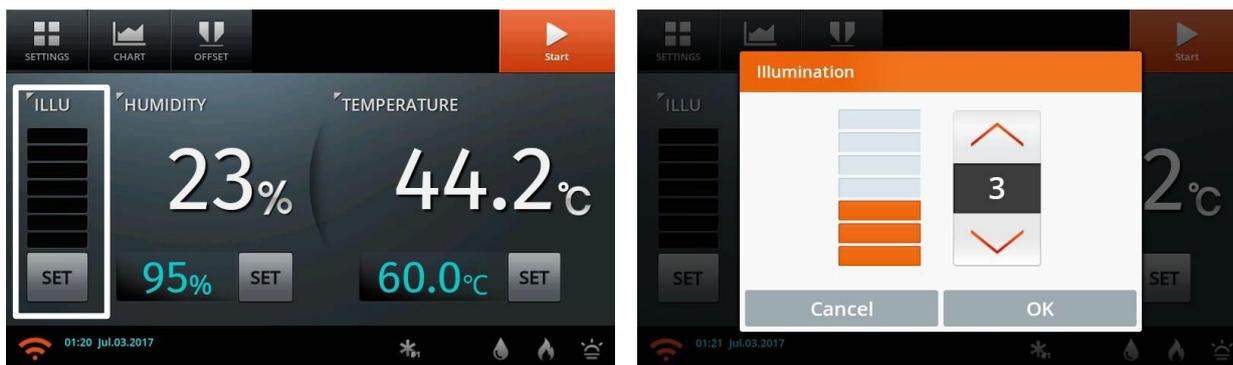
- You can set the Humidity by entering the number directly on the Humidity Setup screen by pressing “SET” button on the right where the set temperature is shown.



- You can set humidity between 30% to 95%. Press “ENTER” after entering the set Humidity. It returns to the main screen when the set Humidity is applied.

## 7.4 Illumination Setting

- The lighting setting should be performed in accordance with the Operation mode, and in the Fixed mode, it is set in the main control screen, and in the Program mode, the illumination value is set in the Segment Setting window.
- The set points is eight steps from 0 to 7, and 0 means that the illumination is 0, and whenever setting the step from 0 to 7, seven lighting groups operate as follows:



**Configuration of LIGHT BANK SYSTEM in SWGC-450 Model**

The LIGHT BANK SYSTEM is configured with the Lamps of total 14EA:

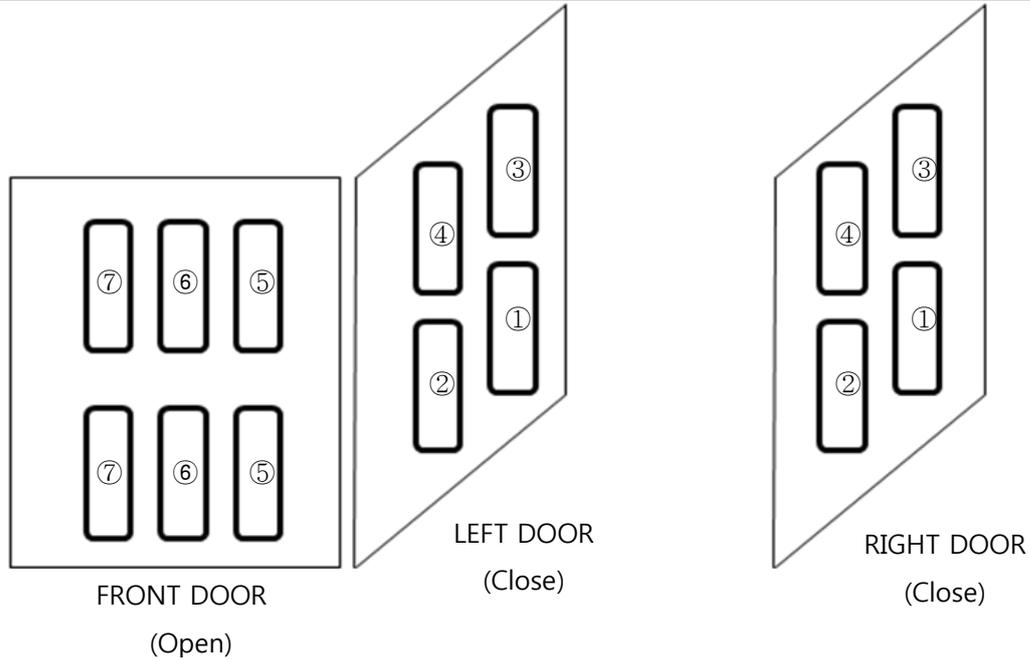
LEFT DOOR 4EA

RIGHT DOOR 4EA

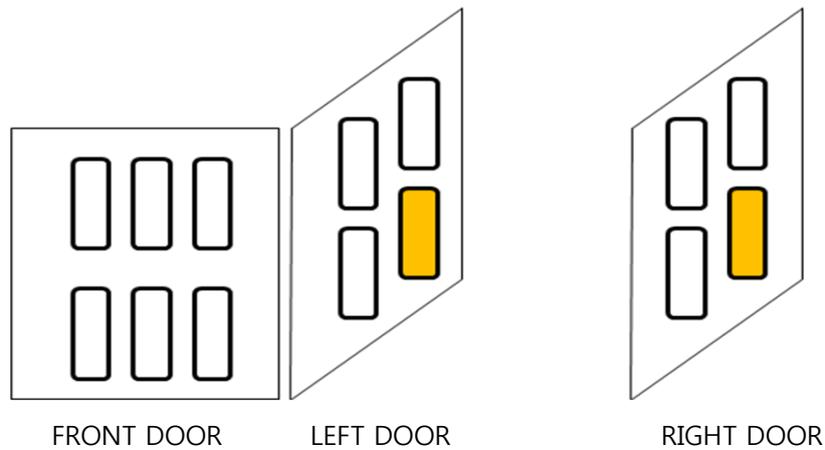
FRONT DOOR 6EA

and they are divided into seven GROUP.

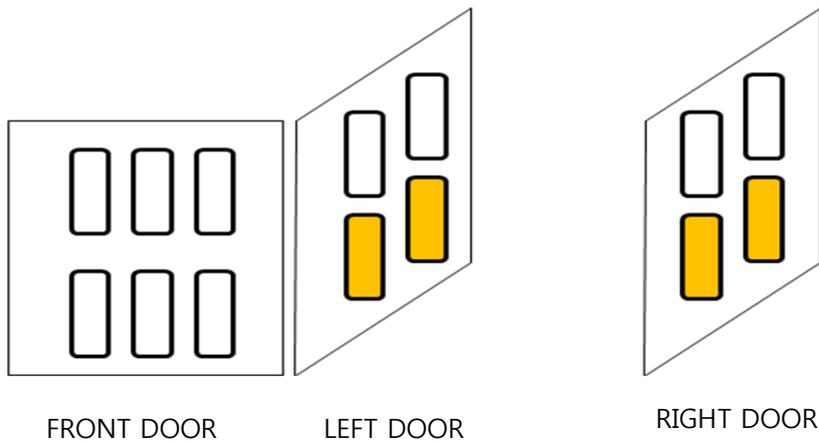
1 GROUP	2 GROUP	3 GROUP	4 GROUP	5 GROUP	6 GROUP	7 GROUP
①	①②	①②③	①②③④	①②③④⑤	①②③④⑤⑥	①②③④⑤⑥⑦



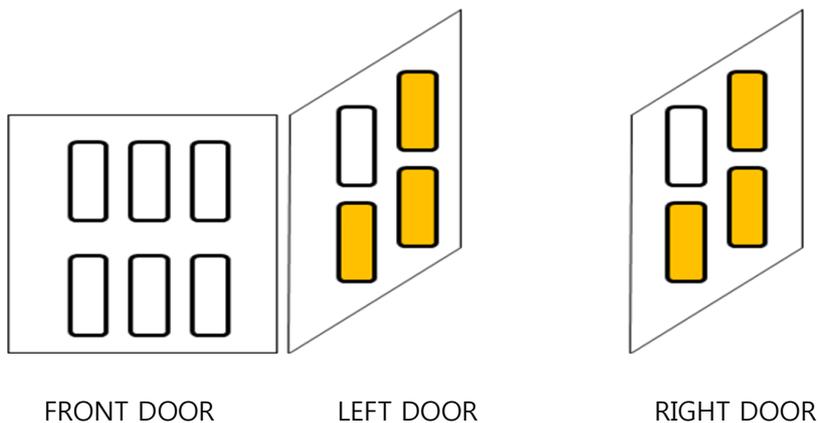
**Set 1: 1 GROUP (①)**



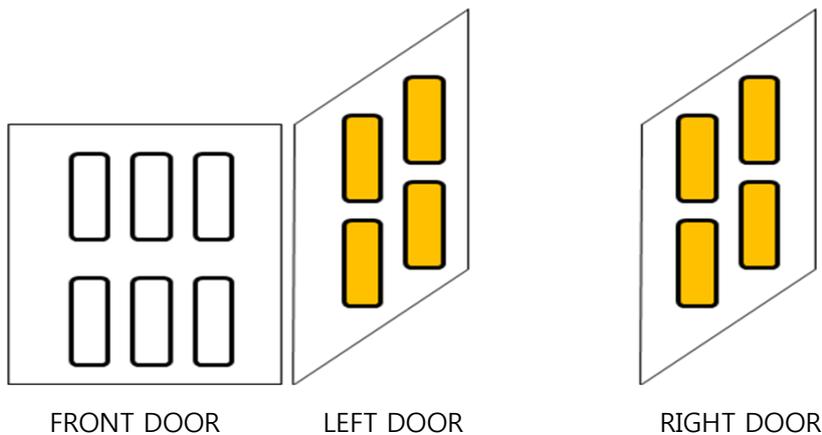
**Set 2: 2 GROUP (① ②)**



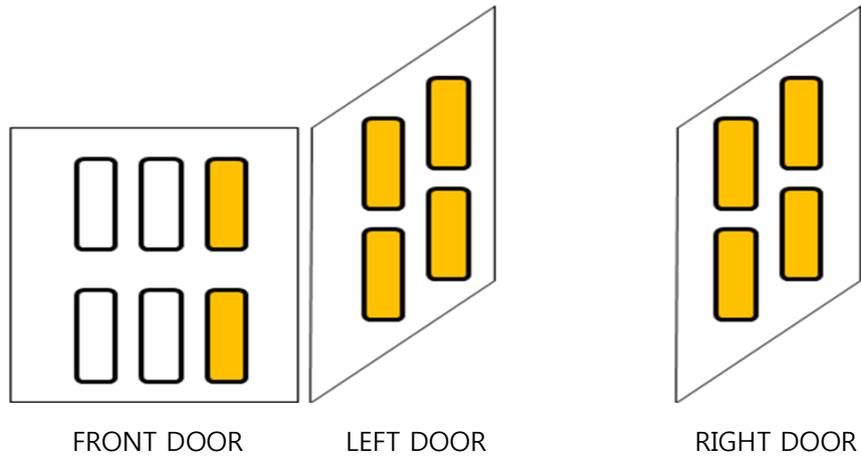
**Set 3: 3 GROUP (① ② ③)**



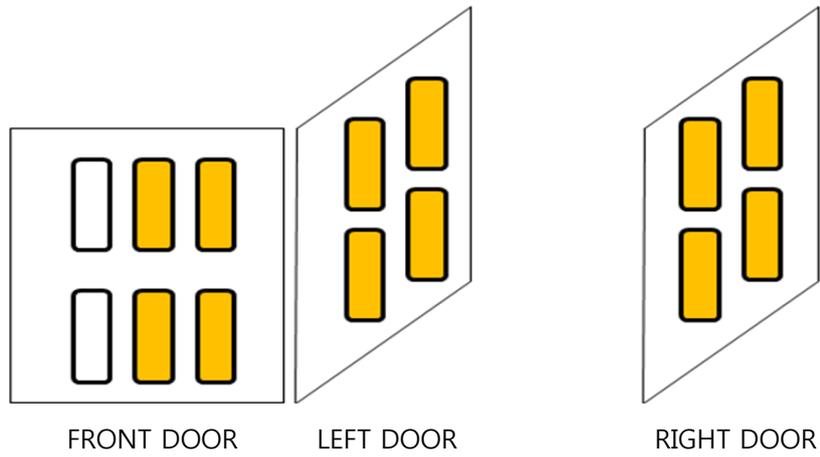
**Set 4: 4 GROUP (① ② ③ ④)**



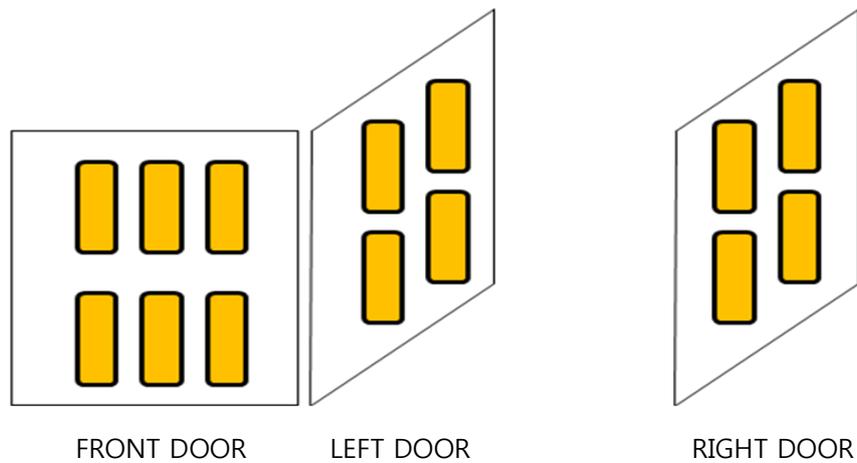
**Set 5: 5 GROUP (① ② ③ ④ ⑤)**



**Set 6: 6 GROUP (① ② ③ ④ ⑤ ⑥)**



**Set 7: 7 GROUP (① ② ③ ④ ⑤ ⑥ ⑦)**



**Configuration of LIGHT BANK SYSTEM in SWGC-1000 Model**

The LIGHT BANK SYSTEM is configured with the Lamps of total 28EA as:

LEFT DOOR 6EA,

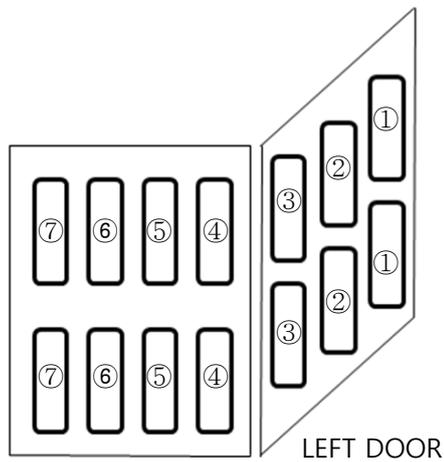
RIGHT DOOR 6EA,

FRONT DOOR(LEFT) 8EA,

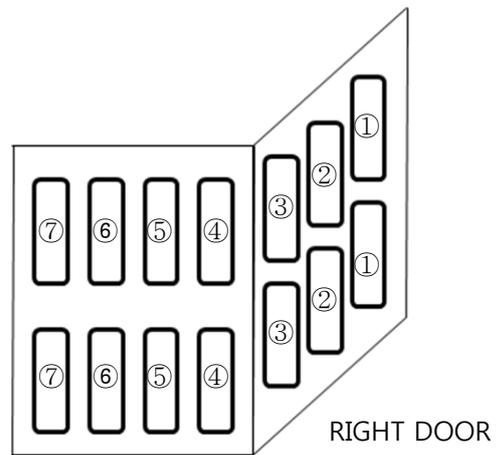
FRONT DOOR(RIGHT) 8EA,

and they are divided into seven GROUP.

1 GROUP	2 GROUP	3 GROUP	4 GROUP	5 GROUP	6 GROUP	7 GROUP
①	①②	①②③	①②③④	①②③④⑤	①②③④⑤⑥	①②③④⑤⑥⑦

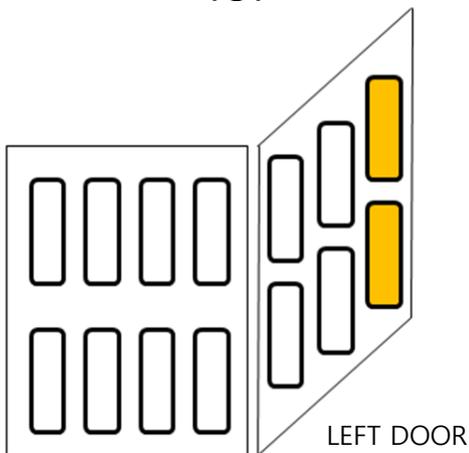


FRONT DOOR(LEFT)

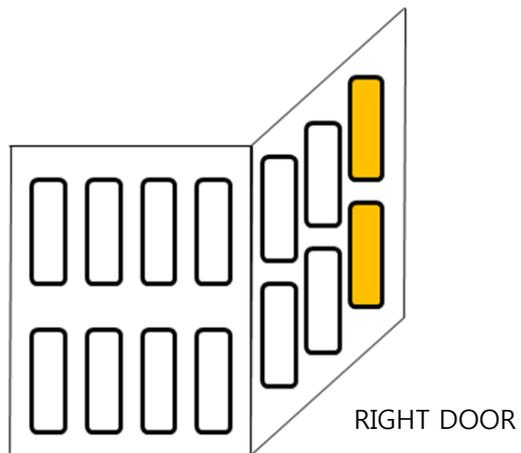


FRONT DOOR(RIGHT)

**Set 1: 1 GROUP (①)**

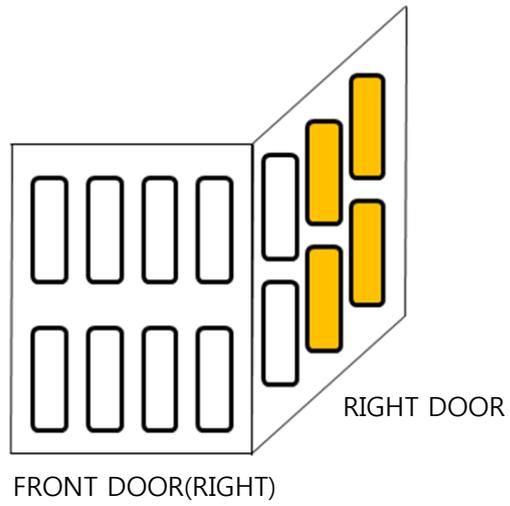
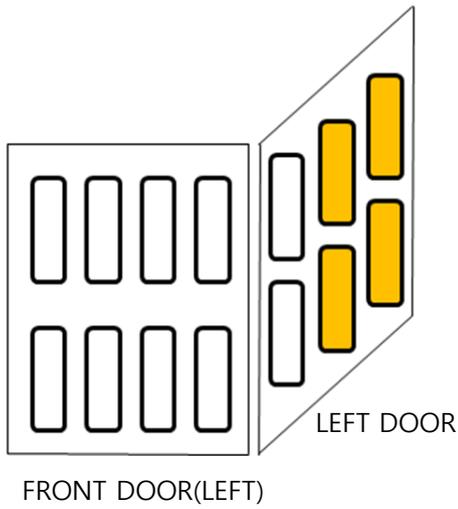


FRONT DOOR(LEFT)

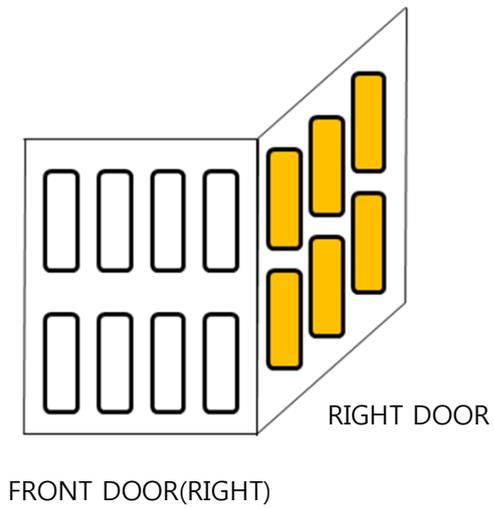
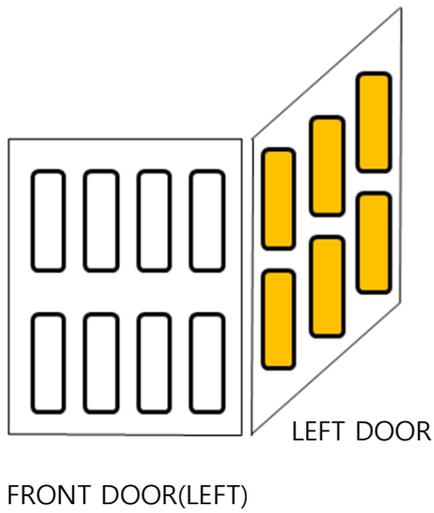


FRONT DOOR(RIGHT)

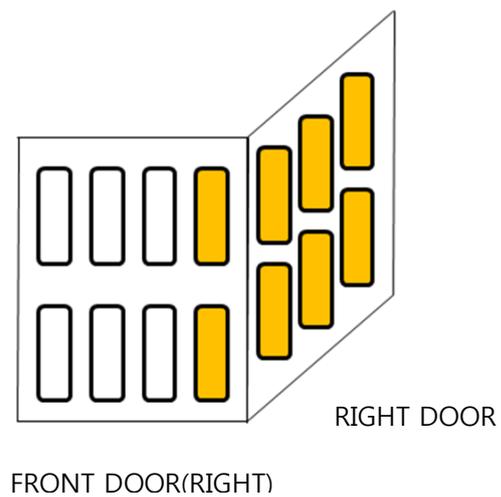
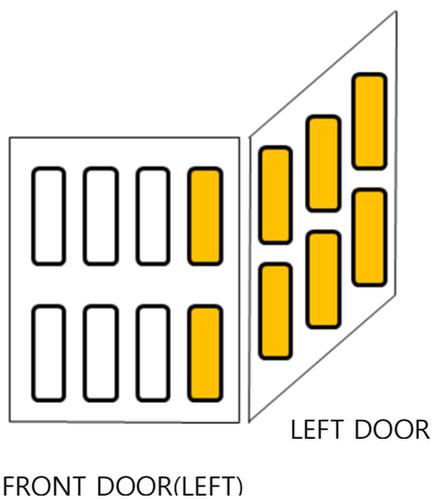
**Set 2: 2 GROUP (① ②)**



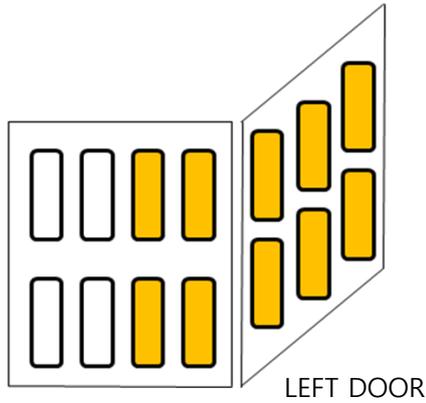
**Set 3: 3 GROUP (① ② ③)**



**Set 4: 4 GROUP (① ② ③ ④)**

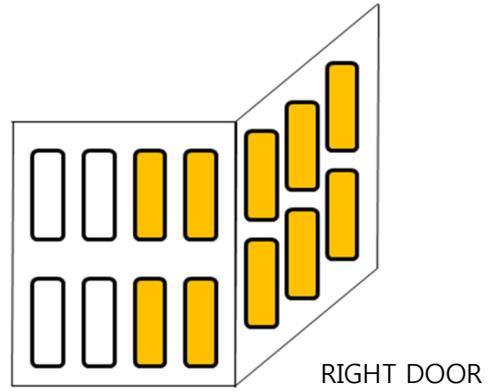


**Set 5: 5 GROUP (① ② ③ ④ ⑤)**



LEFT DOOR

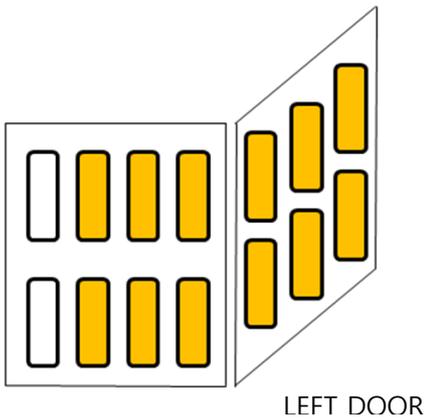
FRONT DOOR(LEFT)



RIGHT DOOR

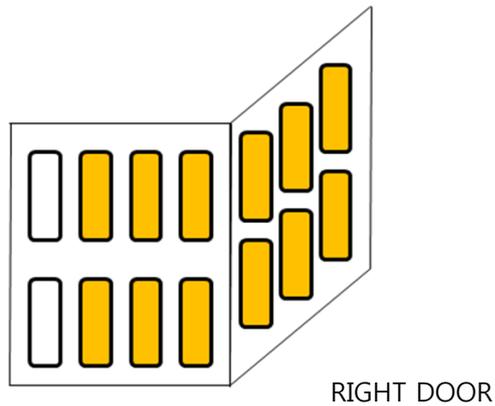
FRONT DOOR(RIGHT)

**Set 6: 6 GROUP (① ② ③ ④ ⑤ ⑥)**



LEFT DOOR

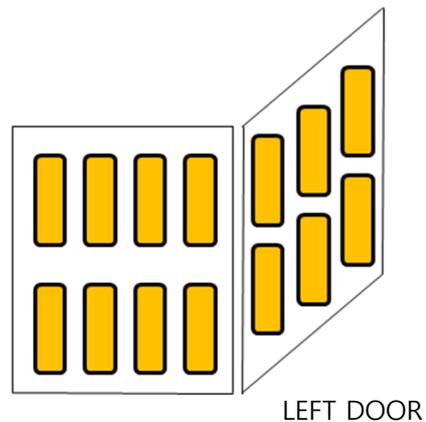
FRONT DOOR(LEFT)



RIGHT DOOR

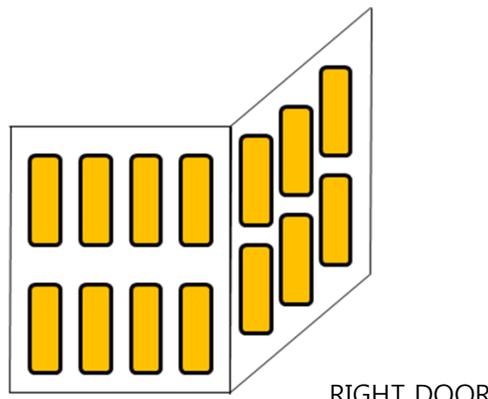
FRONT DOOR(RIGHT)

**Set 7: 7 GROUP (① ② ③ ④ ⑤ ⑥ ⑦)**



LEFT DOOR

FRONT DOOR(LEFT)



RIGHT DOOR

FRONT DOOR(RIGHT)

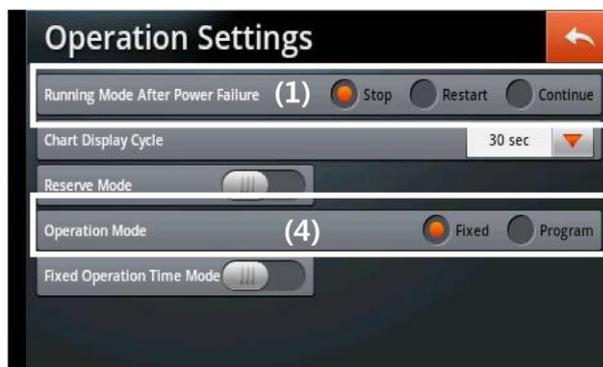
## 7.5 Product SETTINGS

- All functions on this device can be set in “SETTING” menu. When you touch the return button on the top right of screen in all menu screen, it switches to the previous screen.
- Touch the “STOP” button on the top right to stop the device and check the SETTING menu being activated since SETTING menu is disabled during operation.



- It is described in order for the operation of product. Proceed with the following steps in order.
- In order to use the product’s WiRe™ Service, please refer to how to install "WiRe™ Service".

### ① Operation Settings



#### (1) Running Mode After Power Failure

- It sets a mode for power is abruptly cut off and turned back up due to power supply issues such as power outage.
- When setting a Stop mode: It stands ready at the value prior to the power outage and maintains the operation on hold.
- When setting a Restart mode: It operates depending on (4) Operation Mode.

A) Fixed Mode: When reauthorizing the power, it automatically operates at a temperature set that it previously operated on and the operation time on main screen starts from 0 again.

B) Program Mode: It restarts from the first segment of the previous pattern it operated on.

- Setting a Continue mode: It operates depending on (4) Operation Mode.

A) Fixed Mode: When reauthorizing the power, it automatically operates at a temperature set that it previously operated on and the operation time on main screen continues its counting.

B) Program Mode: It restarts the count from the remaining time of first segment that stopped and it restarts.

### (2) Chart Display Cycle

- You can set the temperature cycle shown on Chart. User can select from 30 seconds, 1 minute and 2 minutes.



### (3) Reserve Mode

- Set date and time you want to operate the device and it will start at the reserved time. Minimum time required to use this mode is 5 minutes.
- It automatically turns off after being applied one time.

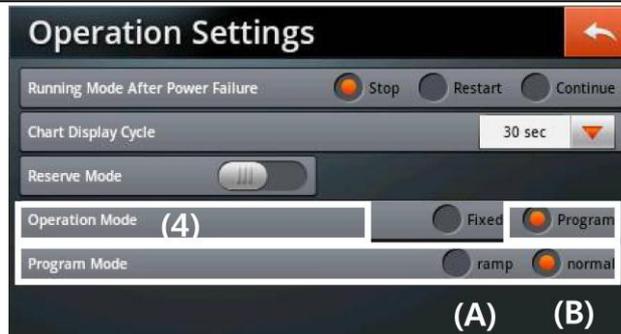


### (4) Operation Mode

- There are two choices: the Fixed Mode that operates within the fixed temperature range and the Program Mode that operates in various temperature in sequence by patterns.
- \* Fixed Mode
- If Fixed is selected, Fixed Operation time Mode window is activated.



- Set Fixed Operation Time Mode to ON and press Fixed Operation Time to set the value of timer. It operates for a time it set when you start the product from main screen.
- If Fixed Operation Time Mode is set to OFF, the set temperature keeps operating.
- Limit of Operation Time is 3 minutes ~ 23 hours and 59 minutes.
- \* Program Mode (in order)
- If the program is selected, Program Mode window shown below is activated.
- Program Mode can select one of two different methods to reach a target temperature.
- The following describes how to set the product operation. Please refer to ④ Program for how to set Program Mode in detail.

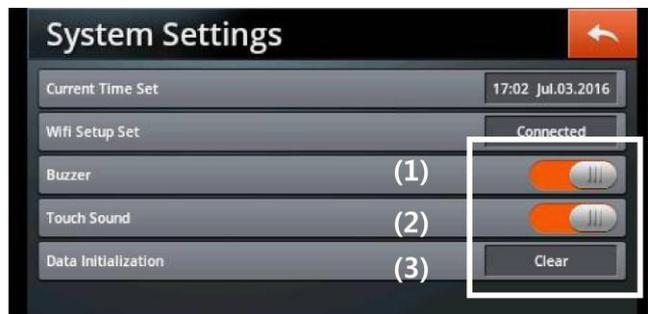


A) Ramp: It can set time to reach a target temperature.

Per one target temperature, it needs a segment time setting to maintain a target temperature after setting the segment time to reach the target temperature. If the maintaining time for target temperature is not needed, do not make second segment for the target temperature.

B) Normal: It operates at the maximum performance to reach a target temperature

### ② System Settings



(1) Buzzer

➤ You can select ON/OFF for Error alarm.

(2) Touch Sound

➤ You can select ON/OFF for Touch Button sound.

(3) Data Initialization

➤ It initializes Operation Settings stored and Chart Data.

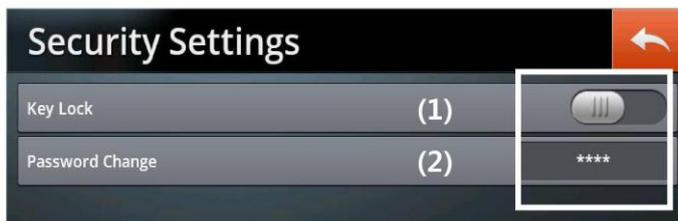


### ③ About

➤ You can check information of the device as Serial Number, Model, Temp Range and a version of Touch App.



**④ Security Settings**



**(1) Key Lock**

- It requests password to access some key menu settings in menu. Key Lock is activated by setting button to the right.

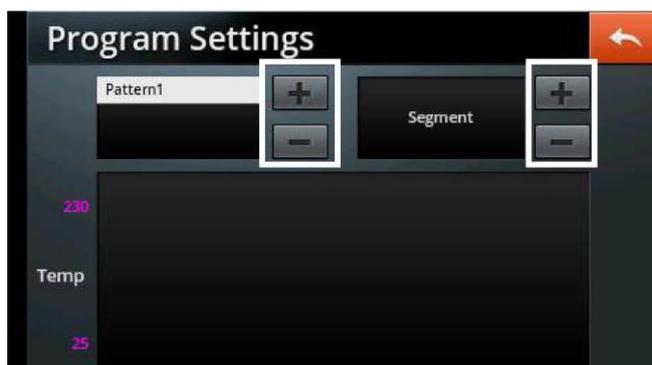
**(2) Password Change**

- It allows password to change. Enter 4 digits password stored in "Current Password" (factory setting "0000") and type in "New Password" and "Retype Password" to finalize the process.



**⑤ Program (In order mode)**

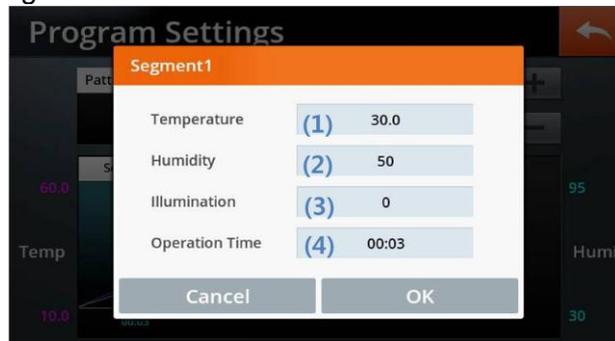
- You can select and store operation program as pattern and segment.
- You can select and use one of several programs stored when using the product.
- Program is a collection of Pattern and pattern is a collection of Segment.



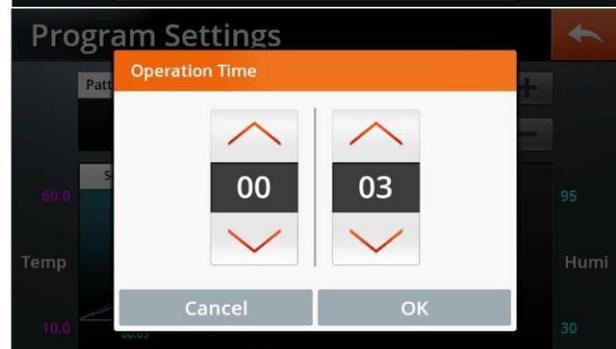
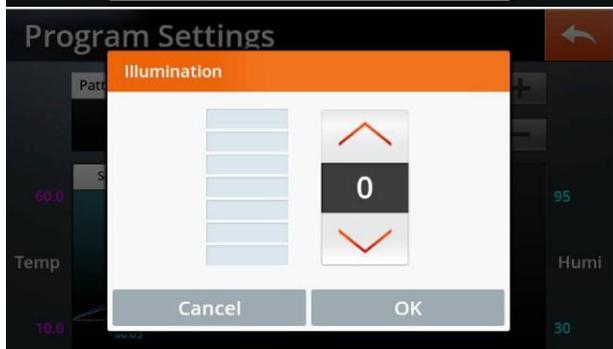
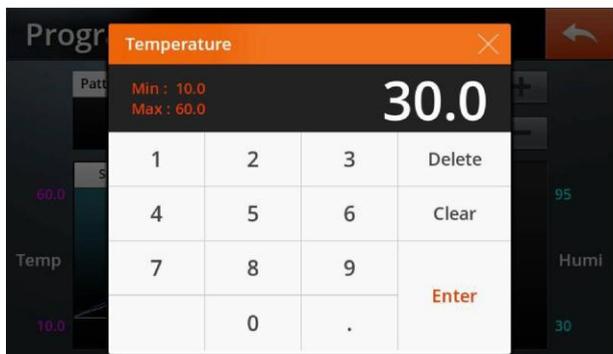
- Pattern can store up to 120 and a maximum of 100 segments can be stored in 1 Pattern.
- Pattern is created by using + button, and in case you want to delete, press the number of Pattern you want to delete and verify the Pattern number selected in white color and delete using – button. If Pattern is deleted, the Segment stored within the Pattern also is deleted.
- If you want to set Segment within Pattern, select the Pattern number you want to select as Segment, create by using + button next to Segment. If you want to delete, press the corresponding Segment number and verify the selection in while color, delete using – button.
- Pattern and Segment created can be immediately verified on screen in graph, and can enter

or change values by clicking the graph.

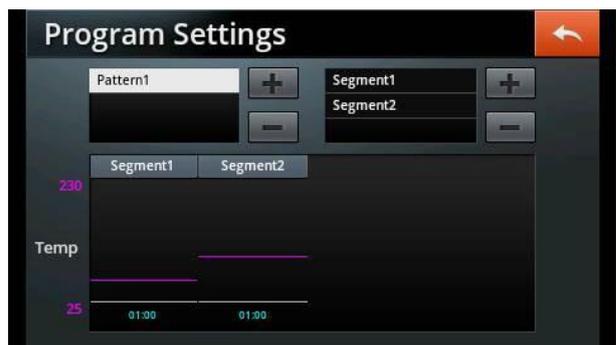
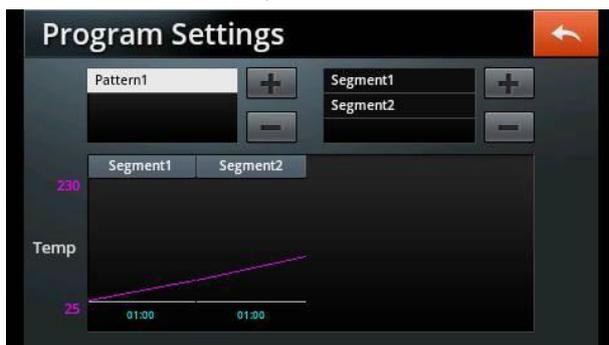
- Enter the value of Segment after creating Pattern and Segment. You can verify the temperature, humidity, illumination and time set for the Segment selected when you select Segment from the Segment window and touch.



- You can reset temperature by clicking (1) Temperature window of Segment and can reset the Humidity by clicking (2) Humidity window.
- You can reset illuminance by clicking (3) Illumination window of Segment and can reset the timer by clicking (4) Operation time window.



- If OK is pressed after entering the value set, you can immediately verify the changes from graph.
- Segment graph is displayed depending on the operation method selected from ramp or normal from Program Mode of Operation Mode.



- When setting with Program Mode, it is activated when (1) Program menu is created and operation is stopped. (2) STEP and (3) buttons are created in the operation of Program Mode.

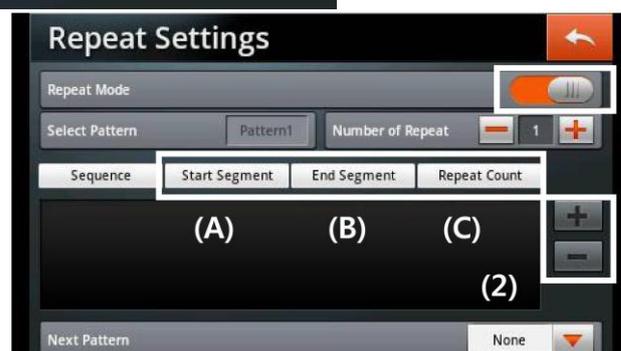
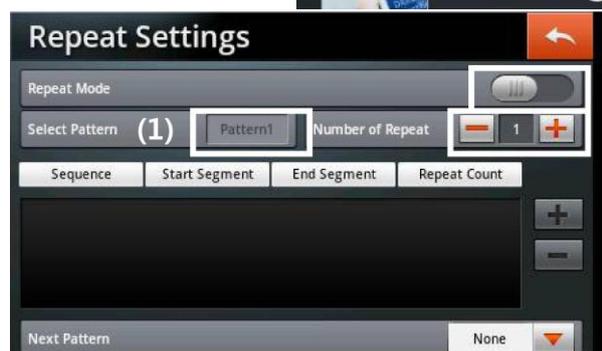


- (1) Program button: it enters into the Program setting screen rapidly.
- (2) Step button: It skips to next Segment while in operation.
- (3) Hold button: It temporarily stops while in operation.

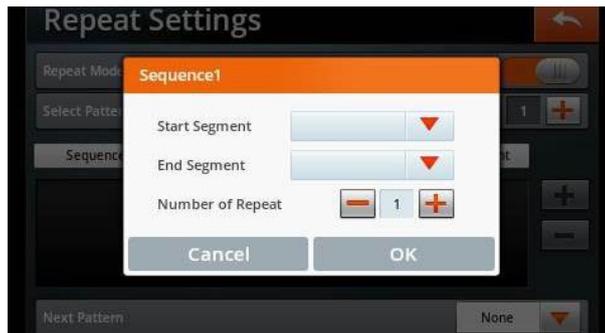
### ⑥ Repeat

You can set to repeat the operation within the selected Pattern by entering Repeat after selecting Pattern from Program Settings screen.

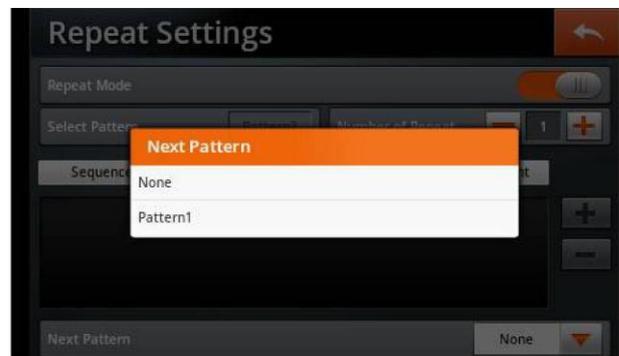
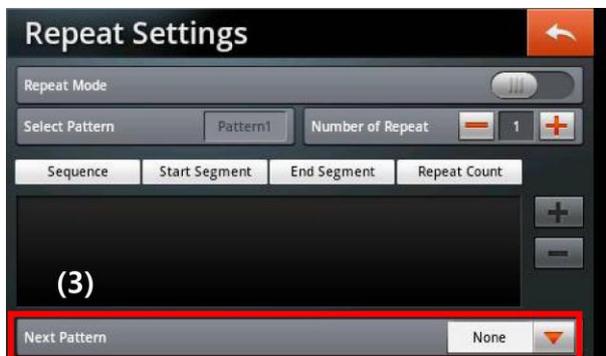
- If Pattern is created from Program Settings, you can set and store Repeat Mode regardless of Operation Mode. However, when operating with Program Mode, you must set Repeat Mode to ON.



- (1) You set the number of repetition after verifying the Pattern number of Select Pattern. You can set to repeat up to 100 times, and can be set to infinity by pressing – button at 1.
- (2) You can edit the order of operation after setting the number of repeat. Select Start Segment and End Segment by pressing + button from Sequence list, and set the number of repetition between the Sequences selected.
  - (A) Start Segment: Select first Segment for repeat operation.
  - (B) End Segment: Select final Segment for repeat operation.
  - (C) Segment Count: Set the number of repeats from Start Segment till End Segment.

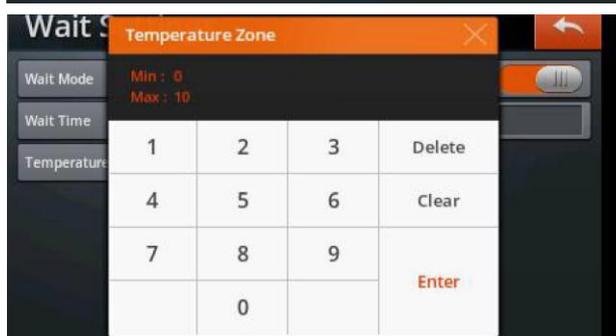


- You can enter maximum Sequence of 10.
- (3) Next Pattern enters Pattern that operates after the repeat operation of selected repeat Pattern is completed.
- Next Pattern can select from stored Pattern other than selected Pattern with Repeat operation, it does not allow to operation in continuation of other Pattern after the Repeat operation if set to None.



⑦ Wait

- In operation of Program Mode, if Segment of selected Pattern has not reached setting value within the time set, Wait Time allows to wait until the temperature, humidity reaches Temperature Zone (set error of the target temperature, humidity  $\pm$  value) without moving into the next Segment.
- If not reached the temperature set within Remaining Time in Ramp Mode, Wait Time starts.

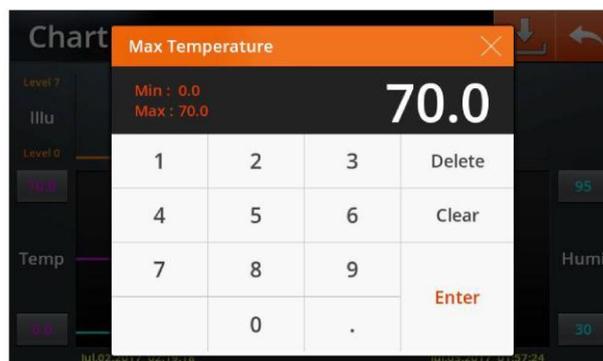
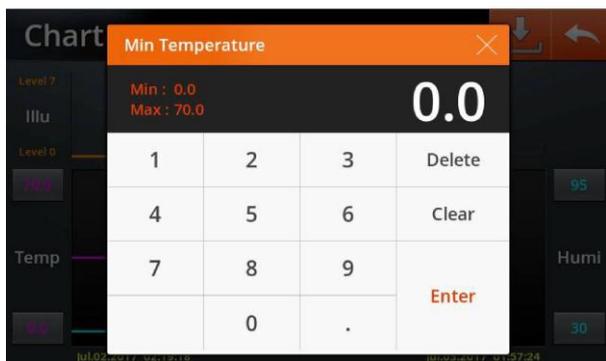


- Wait time can be set to 23 hours and 59 minutes and Temperature Zone can be set to  $\pm 10^{\circ}\text{C}$ .

### 7.6 CHART



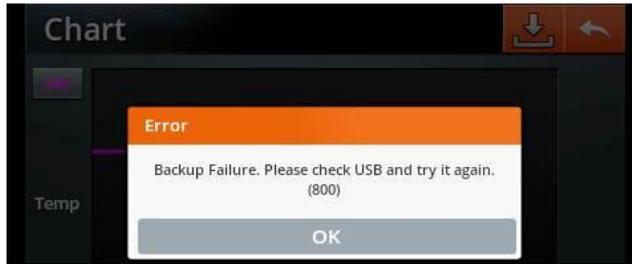
- Temperature data is stored at internal memories at every 10 seconds and maximum 6 months of data are stored. Please use Data Backup once every 6 months.
- The illuminance graph is displayed in yellow at the top.
- The temperature graph is displayed in purple. Temperature scope shown on graph can be changed using the set button on the low left. Maximum and minimum values can be changed within limits shown on a pop up window.



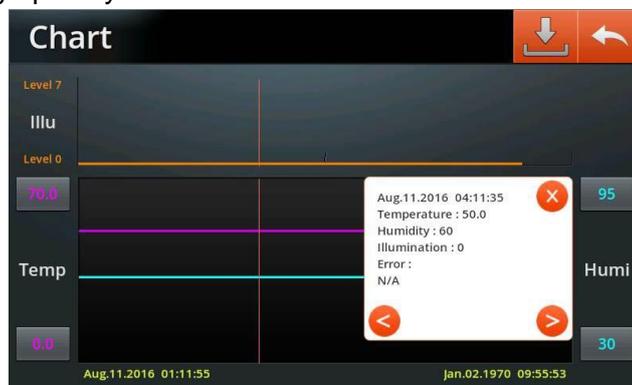
- The humidity graph is displayed in blue. Humidity scope shown on graph can be changed using the set button on the low left. Maximum and minimum values can be changed within limits shown on a pop up window.



- After inserting a USB into the port on top of controller, it stores in the USB if the store icon on top right is pressed.
- Error message appears if USB is not recognized. Press "OK" button and remove USB and reinsert and press the store icon.

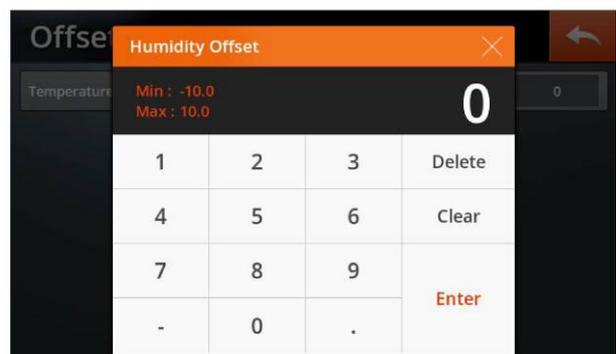
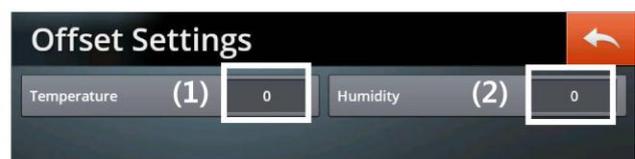


- You can see the detailed information such as date, time, temperature, Error, etc. if you press a point on graph. If you drag right and left or press other points while pressing the point, detailed information of the location emerges on a detail display.
- You can check the information on graph by moving at a small increment of the point using arrows on the detail display. The area showing detail information is displayed in a straight line on the overall graph in yellow vertical lines.



## 7.7 OFFSET

In case a user must test by matching temperature, humidity gauge used as a standard for test with temperature, humidity gauge shown on the controller, you can set the value of offset and increase or decrease the temperature displayed on the screen.



- Limit of offset values are  $-10.0^{\circ}\text{C}$  ~  $+10.0^{\circ}\text{C}$ , and current temperature after setting offset value displays the value that includes the offset.

Once you set the offset value, the value is stored and the offset value is reflected in the current temperature even you press ON/OFF button.

## 7.8 Error Message

If happen an error, Error notice will be showed in the display and if you click it, you can see what happened in detail.

ERROR Message	Causation	Solution
Temp. Error	When display show unreasonable temp. value by out of order of temp. sensor	Call the A/S Center.
Humi. Error	When display show unreasonable Humi. value by out of order of Humi. sensor	Call the A/S Center.
Out of Control Error	When present temperature over 15 degree(can adjust this limit in the User Config. manu)	Check the set value of it and refrigeration system.
Water Error	Notifies when there is insufficient amount of solution in Water Tank.	Please until appropriate line fill in the solution of inside Water Tank.
Door Open	When over 1 min. after open the Door.	Check status of the Door and if still happen it even door closed, call the A/S center.
Revolution Error	When the Communication error problem of equipment and Touch Board.	Please check the connection of the Touch Board.

\* When malfunctions in the Touch Screen occur, please press the Reset Button by inserting an appropriate tool (such as a paper clip) into the Reset hole, which is located in the right frame of the Touch Screen as shown in the figure below. The Touch Screen is rerun by pressing the Reset Button.



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## 8 Maintenance and cleaning

**SWGC Plant Growth Chamber** was manufactured with the consideration of various situations that may occur during the operation. However, for long-term use with stable performance, please observe the following precautions:

1. If the unit is not to be used for an extended period of time, disconnect the power cord from the wall socket.
2. **Witeg** is not responsible for damage to the unit caused by abnormal use or by not heeding warnings and cautions in the manual or unauthorized modifications of the unit.
3. The Air Duct is controlled by user's needs, and if it is unused, it should be closed the entrance and then stored in order to prevent the external contaminants entering from the entrance.

### CLEANING

1. Before cleaning the unit, disconnect the power cord from the wall socket. Otherwise, it may cause an electric shock or fire.
2. To clean the unit, a neutral detergent and soft cloth is recommended. Do not use coarse cloth, strong chemicals or organic solutions.
3. Do not use water, Benzene, Thinner or any alcohol for cleaning the product. It may cause discoloration, damage, an electric shock or fire.
4. If you expect damage by a chemical during cleaning, call technical support team.
5. Do not pour water directly into the unit. It may cause an electric shock or fire.
6. During cleaning of the chamber, be careful cleaning the corners to avoid injury.

### Cleaning Method of the Inner Chamber

- Remove the shelves equipped in the chamber. Clean the contaminated part using a neutral detergent and soft cloth.
- After cleaning, reassemble the shelves properly.
- Do not clean the unit aggressively. Otherwise, the coating or painting of the product could be damaged.

### Cleaning Method of the Exterior

- Clean the exterior using a neutral detergent and soft cloth.
- Do not clean the display or Jog-Dial Knob aggressively as they may be damaged.
- Do not clean the unit aggressively. Otherwise, the coating or painting could be damaged.

### Cleaning Method of the Parts

- Clean the parts using a neutral detergent and soft cloth.
- Do not clean the unit aggressively. Otherwise, the coating or painting could be damaged.

## 9 Troubleshooting Guide

Situation	Confirmations and Solutions
Power Failure	<ul style="list-style-type: none"> <li>✓ Check the supplied voltage is present.</li> <li>✓ Check the power connection and the power cord for proper connection and integrity.</li> <li>✓ Check if the MAIN Power Switch is "ON".</li> <li>✓ Fuse is blown.</li> </ul>
Heating, but temperature is fluctuated	<ul style="list-style-type: none"> <li>✓ Check the temperature that is currently set.</li> <li>✓ Make sure that the power switch is in the ON position.</li> <li>✓ Check that SAFETY Knob is not placed in the "0" position, and if SAFETY Knob is in the "0" position, sets up 20°C~30°C higher than the service temperature.</li> </ul>
Heating, but unit not reaching temperature	<ul style="list-style-type: none"> <li>✓ Check the Set Temperature is higher than ambient temperature (recommended min set temp: 20°C~30°C higher than ambient temp).</li> <li>✓ Problem in the sensor or main controller.</li> </ul>

**If other problems arise, or one of the above not solves problems, please contact your official agent or the manufacturer.**

**Reparations and amendments should only made by [witeg](#) authorized people.**

**Contraventions exclude the warranty.**

## 10 Technical data

Capacity & Models		432 Lit. SWGC-450"	864 Lit. SWGC-1000"
Temp.	Range & Variation	10°C ~ 60°C, ±1°C at 20°C	
	Fluctuation	+0.5°C at 10°C, +0.5°C at 25°C (0% light intensity) +1°C at 10°C, +1°C at 25°C (100% light intensity)	
Humidity	Range & Variation	30% ~ 95% RH, ±3% at 60°C	
	Fluctuation	±1%	
	Humidifier	Evaporation by Fan with Heater	
Illumination	Range	0 to 12.000 Lux	0 to 15.000 Lux
	Lamp	FPL 55W X 14	FPL 55W X 28
	Bank	3 Side Walls	3 Side Walls & Ceiling
Temp. & Humidity Sensor		Temp.: PT100, Humidity: Capacitive Sensor	
Heat-up Time (up to 37°C)		11 min. (0% illumination) / 9 min. (100% illumination)	
Cool-down Time (Down to 10°C)		13 min. (0% illumination) / 15 min. (100% illumination)	
Temp. Recovery (After Door was opened for 30sec)		3 min. at 10°C, 1min. at 37°C (0% illumination) 5 min. at 10°C, 1min. at 37°C (100% illumination)	
Heating Power/ Consumption	for Temp.	1.5 kW	3.0 kW
	for Humi.	1.5 kW	3.0 kW
Compressor		1/2 HP	1 HP
Refrigerant		CFC-Free(R404a) Refrigeration System	
Display		7" Full Touch Screen TFT LCD ( Smart-Lab™ Controller)	
Controller		Smart-Lab™ Controller	
Program Function		Temperature and Humidity : 120 Patterns. 1.200 Segments Light Bank : 7 steps	
Door	Internal	Tempered Safety Glass with Silicon Packing	
	External	3-Side Magnetic Packing Door with Light Bank	
Shelves		4 Teflon Coated Steel Shelves	8 Teflon Coated Steel Shelves
Permitted Total Load		64 kg (16kg X 4 Shelves)	128 kg(16kg X 8 Shelves)
Safety Circuit		Over Temp Protector, Over Current & Leakage Breaker	
Material		Internal: Stainless Steel (#304), External: Power Coated Steel	
Dimension (w X d X h)	Interior(mm)	650 X 700 X 1,050	1,200 X 790 X 1,050
	Exterior(mm)	850 X 1,090 X 1,965	1,400 X 1,150 X 1,965
Packing Size(w X d X h) & Gross Weight		1,400 X 1,220 X 2,210mm, 435 kg	1,600 X 1,500 X 2,200mm 585 kg
Power Consumption		4.8 kW	6.5 kW
Power Supply		AC 400 V, 3N~, 50/60 Hz	

## 11 Certificate

# Certificate

for



**LABORATORY INSTRUMENTS**

**The quality and all features were checked by the manufacturer before the shipment.**

We grant from date of purchase

**two years guaranty.**

This certificate excludes damages by natural disasters or incorrect usages by the customer.

Please look on your account and complete following table:

<b>Article</b>	<b>SWGC Plant Growth Chamber</b>
<b>Typ</b>	
<b>Serialno.</b>	
<b>Date</b>	

**witeg Labortechnik GmbH**

Am Bildacker 16  
D-97877 Wertheim  
TEL: +49-9342-9301-0  
FAX: +49-9342-9301-77  
Email: info@witeg.de  
[www.witeg.de](http://www.witeg.de)

