

Operation Manual

[WATER BATH]

Model : BW-05G / 10G / 20G

Manual No : 00HAA0001153 (Version : 5.1)



Thank you for purchasing a Lab companion product. We always do our best to provide customer satisfaction. This unit is designed using our own new technology and materials.

This operation manual describes the performance of the unit and gives instructions for its correct use. All users must read this operation manual carefully before you use this unit. Please use within the recommended parameters as specified.



Please read this operation manual carefully before you use this unit. Especially, please pay close attention to the safety precaution.

Safety Precautions



“Warning” indicates that correct handling is needed to avoid risk of injury.



“Caution” indicates a possible minor risk to the operator or to the equipment if misused.

Contents

1. Use and a characteristic of equipment	5
2. Equipment installation and a warning matter	6
3. Name of each section and an action	7
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4. Equipment use	11
5. Maintenance of equipment and care.....	17
6. When a problem occurs, measures matter.....	18
7. Product guarantee standard.....	19
8. Specifications	20

1. Use and a characteristic of equipment

Pharmacology, a medical science were chemical and multipurpose Water Bath used for biologies and same various field rose and implemented the **CLS(Custom Logical Safe)-Control System** which considered with the maximum with convenience result safety.

- (1) Logic and configuration are **Control System** of developed the highest safety grade by researchers of **Jeio Tech (Co.)** for safe use of heating equipment operated in the environment that it seems to be the experimentation practical course that all kinds of combustibility medications exist in this, and safety is perfect, and is asked. (Patent No. [0328729, 0397583](#))
- (2) **CLS-Control System** carries out temperature control of equipment and heating control in the Main CPU that precise PID algorithm is possible. Also, all actions for safety are designed in order to operate in Logic IC of a priority sequence enemy function to have been built particularly. Therefore, It is becoming so that an action for safety of equipment is certain in any electricity electron impact to be added to equipment.
- (3) As for the **CLS-Control System**, perfection blocks all off in the power 2 that is supplied all kinds of parts with if the safety device which applied to equipment operates at sight. Also, it is kept the later safe state that the power was turned off as for the equipment till operates again that operated fear informs all element to a user in time and a hearing device, and removed fear all element.
- (4) Even if **CLS-Control System** wants to continuously run dirt equipment for the later electricity that electricity was off to have been turned on again, or electricity is turned on with surrounding different factors again, selects the time that wants to stop, and use can do an action of equipment.
- (5) **CLS-Control System** is composed so that my feeble electric current streams down only 5V, 10mA at a point of contact of a used safety device, and there is no damage of a point of contact in use of long time, and the he durability is very long. And It blocked off the power through point of contact disconnection of the later Magnet Switch which

let control of the Thyristor which controlled electric current stream of the heater which used a large electric current if a safety device was operated stop first and prevented point of contact damage and Noise revelation of a power switch. It enforced with the above-mentioned objection order when started an operation of equipment, and it was prevented point of contact damage and Noise revelation of Magnet Switch.

2. Equipment installation and a warning matter

- (1) Please confirm the equipment contents after a packing release.

Main body (1set), User instructions (1), Glass tube Fuse (2EA), Maincord(1EA)

- (2) This equipment is made in order to operate normalcy in the fixed power. Please confirm whether the use power agrees with the power of ID Plate (a tablet stuck to on the product backside) before installing equipment. All the members must use the power how a grounding of the second class or above certainly worked, and Power Cord must use the Connect which a Ground terminal was certainly provided to.

- (3) Sample liquid should not be flammable. If it's inflammable, flash point (Fp) should be 40C or above. Using temperature should be at least 5C lower than flash point (Fp-5) for safety.

WARNING

- User must check for a suitable power supply.
 - User must use an earthed power supply.
 - User must use heat transfer media at 5°C lower or more than the ignition point (Fp -5°C).
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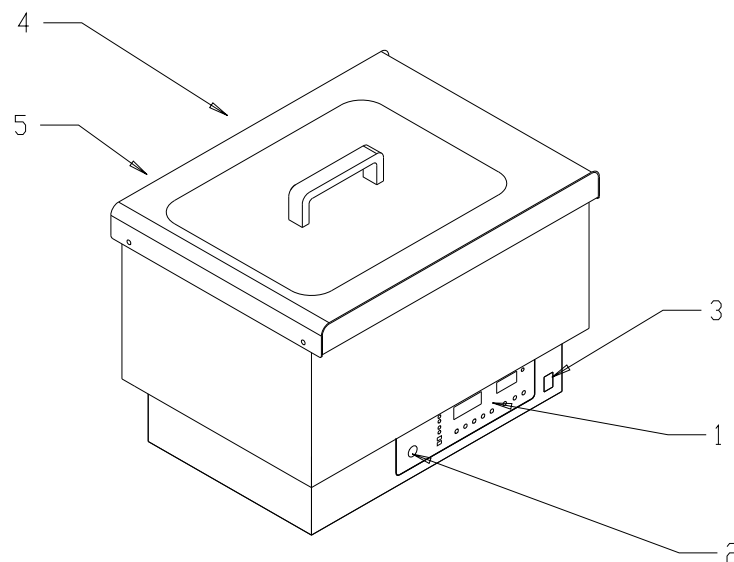
- (4) Uses an appropriate tool when you carries a product, or two people or above please do conveyance in doing it..

- (5) A socket is installed in the place where equipment is near and must be easy to use.

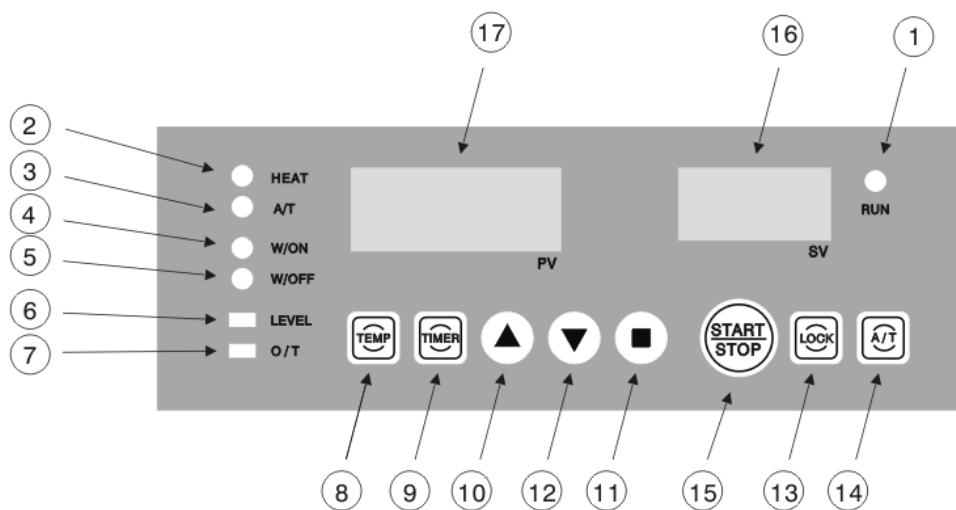
- (6) The floor where vibration, a shock are not added to is hard, and please install equipment in the plane that is a level.

- (7) A place with heat source (Heat Sources) or a direct sunlight avoids it, and please install in a place of surrounding temperature 5C ~ 40C, relative humidity 80% or below.
- (8) Acetone, Methylene Chloride and a place with the same abandonment solvent or a strong high frequency noise please do not use near equipment to occur in.
- (9) Please do it so that moisture, an abandonment solvent, dirt, corrosion gas are not spent in a Control Box section of equipment.

3. Name of each section and an action



1) Display



Loading did the Main CPU which had possible verified software, and Digital PID–Auto tuning is equipped with a control device of the safety lamp class that a temperature revision function for a Pt–100 sensor and a heating control function back are the highest.

(1) RUN LED

LED informing whether you are stopping whether equipment is operating rises. If equipment operates normalcy, LED is turned on, and LED blows out if equipment is stopped.

(2) HEATER LED

Heater is LED informing that it is displayed.

(3) Auto Tuning LED

When It is doing Auto Tuning, this LED twinkles.

(4) Wait On Timer LED

It is the LED that setting time marks the timer that equipment had the function that Start becomes after a progress.

A timer shows an action atmosphere with the dirt that a timer indicates that operates if LED twinkles, and LED is completely turned on.

(5) Wait Off Timer LED

It is LED marking the timer which had the function that Stop becomes that PV and SV since an agreement after a setting time progress.

A timer shows an action atmosphere with the dirt that a timer indicates that operates if LED twinkles, and LED is completely turned on.

(6) Low water level warning LED

If use is possible, and the low water level is detected in a high temperature not to mention the durability because uses our company peculiar sus–ball as a device detecting the low water level of Bath underwear liquid (distilled water, Alcohol, oil), equipment is stopped, and Buzzer continuously rings. Presses a Start/Stop button after covering a solution in case of this and operate again.

(7) Overheating warning LED

While equipment is stopped if a set of a machine formula overheating prevention device

installed in front department beats, and a Bath underwear liquid temperature rises more, Buzzer rings, and overheating warning LED blinks. Because it is the state that equipment is on a stop by the element that fear conducted (overheating), presses one time of appropriate later Start/Stop button which took action, and Buzzer and LED use the later equipment which removed what blink.

(8) Temp button

Uses when sets up a temperature.

(9) Timer button

Uses when sets up a timer.

(10) Up button

Uses when fixed value is increased.

(11) Enter button

Presses this later button which changed fixed value, and fixed value is saved.

(12) Down button

Uses when decreases fixed value.

(13) Lock button

This is to lock controller buttons

(14) Auto Tuning button

A function operates if it presses this button for three seconds when it practices Auto Tuning.

(15) Start/Stop button

Uses equipment when removes action or that a warning beep and LED blink if lets you stop or removes a dangerous element because of the dangerous cause if an operation of equipment was interrupted.

(16) SV indication window

Displays a setting temperature or marks the rest of time when a timer operates.

(17) PV indication window

Displays a current temperature.

2) Over-Temp. Protector

It is to protect equipment and the experimentation object from overheating as the safety device which had an independence circuit.

A warning sound and LED of Display blink so that a function of controller lets you stop equipment automatically if heated up fear temperature or above that it comes down or set up because of the operation childishness of a user, and a user can recognize overheating.

3) Main Power Switch

Uses when turn on or off the main power.

4) Fuse

It was connected with (Phase) in 2 all and let safety be high.

5) Drain Valve

Uses when drainage gets a solution of the inside Bath done with special made Valve structure.

A solution of the inside Bath is drained if turns Valve to two or three times to the left.

CAUTION

Please be careful that the valve can be detached if you turn it more than 5 rounds and suitable precautions should be taken when draining high temperature liquid.

4. Equipment use

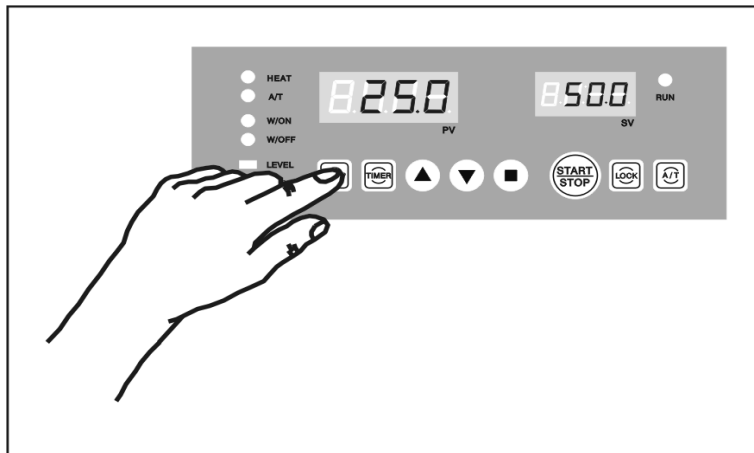
1) Basic use





- (1) Fills liquid (distilled water, Oil) of quantity to get in an experimentation purpose in Bath before the power is connected.
- (2) Approximately 10% located with Over Temp. Protector Knob setting value high more.
- (3) Setting value the power is connected and lights up Main Power Switch, and to want is entered.
- (4) Press Start / Stop Key, and operate.

2) Temperature setting way

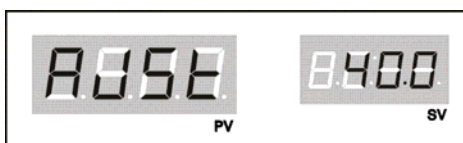
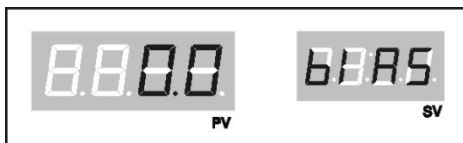
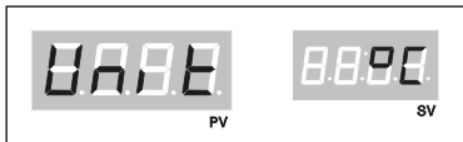
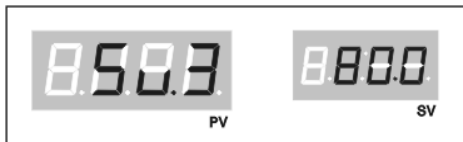
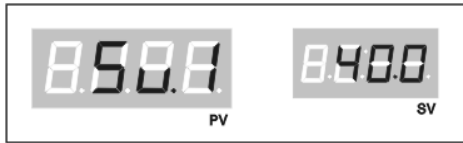
- (1) Press  button.

A number of a window marking a setting temperature among two windows displaying a current temperature and setting temperature blinks.







- (2) Presses the later  key which input a temperature uses  key and  key when a number twinkles, and to want of a window displaying a setting temperature into and finishes setting.
- (3) If there is not a key input for temperature setting way about 10 seconds, a change is canceled, and will turn back with the first state.
- (4) When the window which presses  key, and display a setting temperature twinkles, the following additional function is displayed if it is pressed key once again.


3) Additional function of a  button





(1) Favorite values can be stored at Sv.1, Sv2, Sv3 for each operation.

Press  2 times and set temp. values by pressing  and , and conclude the setting by pressing .

Set temperature is saved on memory and set temperature varies Sv1, Sv 2, Sv 3 are applied the same.

Press  button repeatedly then Sv1, Sv2, Sv3 are shown and temperature unit set mode shown by pressing 5 times repeatedly.



(2) This is a function vary the unit of temperature value.




Initial display is °C and it can be varied °C and °F by pressing  and  buttons.

(3) Next mode is shown by pressing  6 times.

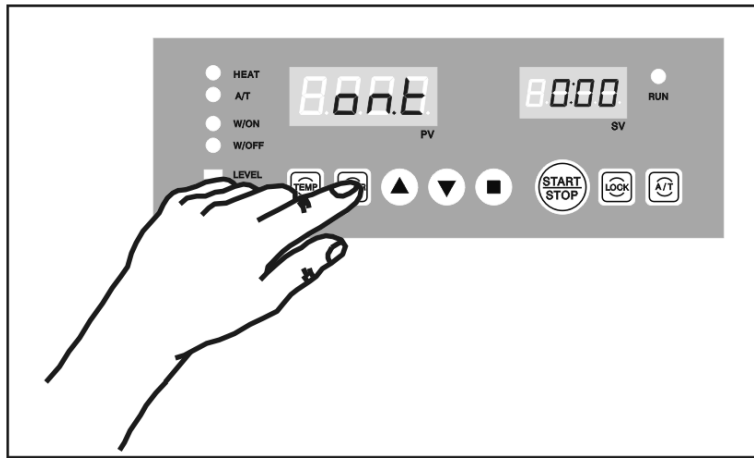
This compensates the temp. value errors.

Requested values are put on PV display.




Move to the next mode by pressing  and  buttons.

PV is put on the SV display and can be set as exactly as shown on thermometer. Set the value by pressing  and , and conclude the setting by pressing .

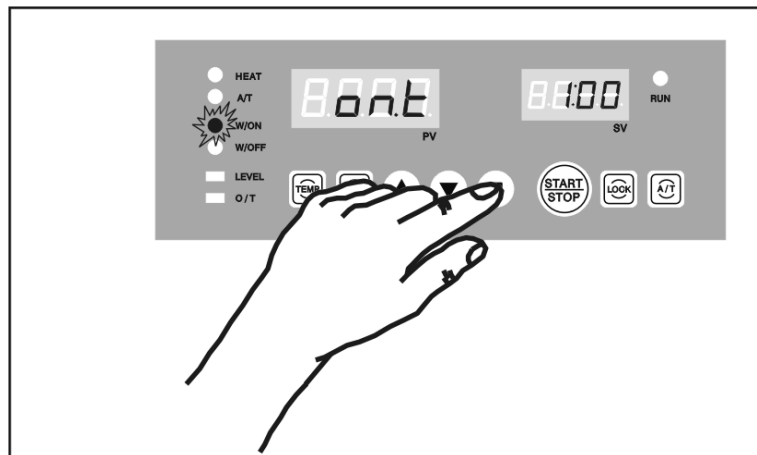
4) Timer setting way






(1) Presses one time of  button.

Time is marked at the window which Timer kind (On Timer / Off Timer) is displayed at a window displaying a current temperature, and mark a setting temperature. Press the later  button which input time uses a  button and a  button, and to want into and finishes setting.

(2) A Beep sound and W/ON LED informing later setting completion to have finished setting are turned on.

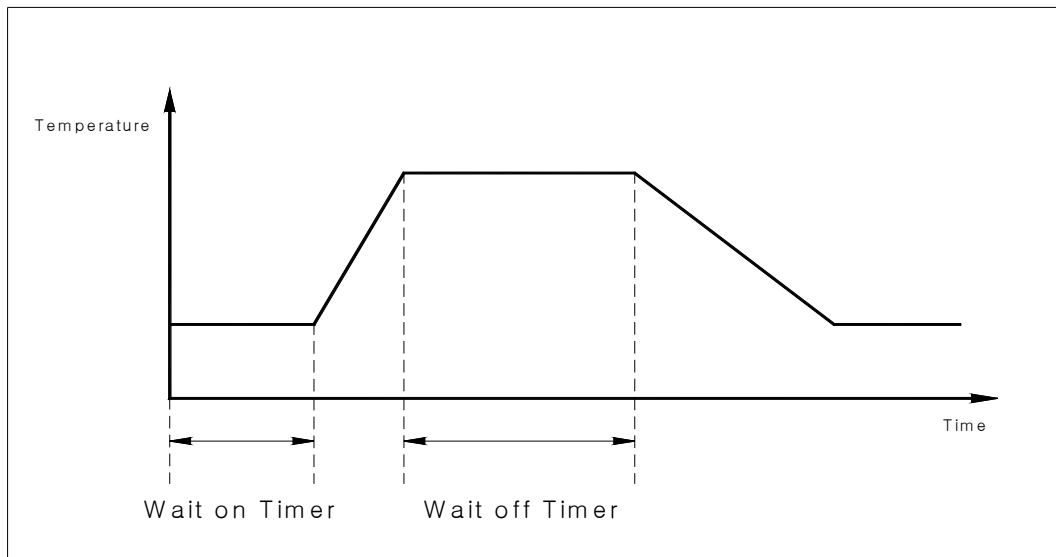


(3) Can set up Off Timer if presses a  button more once.

Press the later  button which input time uses a  button and a  button, and to want into and finishes setting.

(4) A Beep sound and W/ON LED informing later setting completion to have finished setting are turned on.

(5) A function of Timer is as follows.



① On Timer

- It operates that the time that set up in On Timer after a progress.
- At least value is one minute the adjustable maximum value for 99 hours 59 minutes.


② Off Timer

- That Off Timer is run from the moment when SV (a setting temperature) agreed with PV (a current temperature), and setting time after progress one is stopped.

③ Mixture of On, Off Timer


- Equipment is run like the above picture if set up two Timer together.

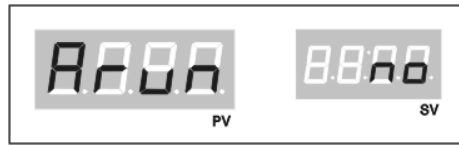
(6) Timer Setting cancellation

While presses a  button to cancel setting of Timer, and LED blows out, the Timer which there was on setting is canceled. (It is canceled On/Off Timer all)

Or the Timer which was set up as 0 if sets up time of Timer wanting cancellation as 0 if is the only and wants to cancel in two Timer is canceled.

5) Additional function of a button

If it is pressed  key in On Timer/Off Timer too, the following additional function is displayed.



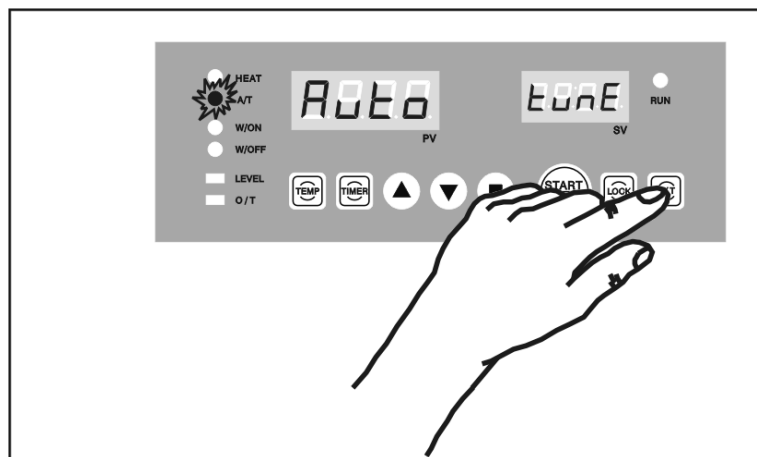
(1) It is a kind of cease-fire reward function.

It is a function equipment stops a brief cease-fire when <S> operates equipment or equipment please run automatically if the power is recovered if it was me, and to do the power by mistake.


Equipment becomes Run at the same time that all the members become a reset if they set up as Yes.


6) Auto Tuning way

Perform Auto Tuning in order to get precise and rapid temperature control. PID value saved automatically after Auto Tuning.



(1) Set temperature you want.

(2) Press  button for a while(3seconds) then Auto Tune shown display like right hand side picture and A/T LED blinking.



(3) A/T is functioning by pressing  by which RUN LED is on and A/T LED is flickering

(4) Auto Tune time is various according to installed environment.

LED turns off after finishing Auto Tuning and the temperature is controlled by auto tuned set value.

7) Lock function

This is to lock controller buttons.

- (1) Press  button for a while (3seconds), then Lock function is set with Beep sound and the unit wouldn't corresponding any more key pressing.
- (2) In order to deactivate this function please Press  button for 3 seconds again.
- (3) This protects improper pressing of the controller buttons while operation.

5. Maintenance of equipment and care

1) Equipment main body

- (1) Pulls out off and a power plug from a power socket with Main Power Switch.
- (2) A solution of the inside Bath inside is removed.
- (3) Washes Bath with soft cloth to have wetted to a neutrality detergent.
- (4) Washes Bath with soft cloth to have wetted in distilled water.
- (5) Please wipe dry cloth.
- (6) Please do not use an abandonment solvent.
- (7) A user must confirm the appropriate way that does not harm equipment before execution to a manufacturing ruler if removes equipment cleaning or a pollution with other way that was not designated by a manual.
- (8) Toxic chemistry to harm a skin is material, but must have wiped with the later dry patch which put on safe Mask in safe gloves and toxic Gas in toxic chemical matter when matters generating dangerous Gas overflow and streamed fully.

2) Accessory

- (1) Immerses Spring Wire Rack, Test Tube Rack into a neutrality detergent.

Division	Spring Wire Rack (W X D X H)mm	Test Tube Rack (W X D X H)mm
BW-05G	-	-
BW-10G	-	100 X 145 X 157
BW-20G	185 X 159 X 170	100 X 230 X 157

- (2) Washes with distilled water cleanly.
- (3) Dries fully and keeps it.

6. When a problem occurs, measures matter

1) If equipment does not operate

- (1) Please confirm the use power.
- (2) Please confirm Fuse.
- (3) Please confirm whether Run LED of Display is blowing out. Presses a Start / Stop button if blowing out, and operate.

2) If temperature control does not work

- (1) If a "Err.S" indication works at a window displaying a current temperature, It does a check because it is the state that did not connect breaking of wire of an input sensor or a sensor.
- (2) If it is temperature Control this or the out cause, request please do Service.

WARNING

- Please turn off the unit immediately when it works incorrectly.
 - Please contact your authorized Jeio tech dealer when you need service and never disassemble the unit on your own will. This may cause a hazard risk to the user and may negate the warranty.
 - Only authorized personal approved by Jeio tech are recommended for electrical service.
 - Please use guaranteed Jeio tech parts when you need parts for this unit.
 - Any faults due to maltreatment and not due to manufacturing defects are not covered by the warranty.
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7. Product guarantee standard

1) A free guarantee repair service period

One year cannot receive the last later free guarantee repair service from the purchase date for 2 year limited warranty. A free guarantee repair service period divides the last later necessary parts purchase if pay, can be served.

Within a free guarantee repair service period, it can be serviced repair, replacement and a repayment in a near Jeio Tech business point freely. If it is an export product, makes that Jeio Tech bears all service related cost a principle.

2) If it cannot be corrected a free guarantee

If a product became damage, a fire, a brilliant person cannot be served because of the act of God by an accident, a pollution or a warning matter disregard back. Besides this, it cannot be served this a depreciation and parts damage by action under the morbid situation that a product includes that is damaged with the over voltage which neglected rated voltage and abuse or this.

3) If receives free guarantee repair service

Lists detailed explanation and model name, the purchase date, a product serial number and send a damaged product to the burden that is postage and insurance premium receipt, and it is a thing. Of course, makes that also Jeio Tech bears return postage a principle for a service period. If it commits product repair after a service period passes, it is the thing thing that Jeio Tech estimates first, and it tries to receive sludge, a quotation first, and it commits.

This free guarantee repair service applies to only the greatest repair, replacement of a product and a repayment and does not apply to a different specific purpose. And It is special and does not undertake roundabout accidental damage and a loss with Jeio Tech this this if data were lost because of other cause.

For the reason that above a few clause does not admit an exception, it cannot be provided free guarantee repair service a consumer buying this product.

8. Specification

Model		BW – 05G	BW – 10G	BW – 20G
Bath volume		5L	10L	20L
Working Temperature Range		Amb. +5℃ ~ 100℃		
Temperature Stability ¹⁾		± 0.2℃		
Controller		PID Controlled microprocessor touch pad, Digital Display		
Permissible environment condition		Temperature : 5℃ to 40℃ Relative humidity : 50% ~ 80% Altitude : Up to 2,000m		
Material	Internal	Stainless steel, 1.0t, Cubic Type		
	External	Steel, 1.0t, Double painted and baked		
	Heater	700W/230V 700W/120V	1000W/230V 1000W/120V	2000W/230V 1000W/120V
	Sensor	Pt 100		
Dimensions (mm)	Bath opening/depth (WXL,D)	231 x 150, 160	285 x 211, 180	345 x 290, 200
	Overall/with gable cover (WXLXH)	355 x 260 x 334	410 x 311 x 354	471 x 390 x 374
Safety Device		CLS(Custom Logical Safe) – Control System		
Electric Requirement	230VAC 50/60Hz	3.0A	4.4A	8.7A
	120VAC 50/60Hz	5.8A	8.3A	8.3A
Weight (Net)		10.0kg	14.0 kg	18.0 kg

※ 1) Technical data (according to DIN 12876)