

OPERATING MANUAL

SHAKING INCUBATOR

MODEL : NB-205



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1. SAFETY

1. 1 General Information on Precaution

- Precaution is to prevent the possible accident or danger during operation.
So, you must keep it.
- Precaution is divided into caution and warning. And, each of them has following meanings.



Warning

If you don't keep this warning, you can get an accident or a fire.



Caution

If you don't keep this caution, you can get injured as well as a property loss.

1.1.1 Safety warning symbols



Warning

Caution

Compliance

Prohibition

No disassemble

Remove plug

Ground

1. 2 Precaution for using the power cable



Caution



Compliance

Do not make the power plug be pressed by back of the product.
(A space between the product and the plug must be 30cm at least.)



Compliance

The power outlet must be only for this product.
(Using various products simultaneously can cause a fire.)



Compliance

Clean the power plug with a dry towel and connect it properly.
(Foreign substances or unsafe connection can cause a fire.)



Prohibition

Do not over bend the power cable and do not make it to be pressed by heavy products.
(When it is damaged, it can cause a fire.)



Prohibition

Do not touch the power cord with wet hands.
(It can cause an electric shock.)



Prohibition

Do not use the damaged power cord and outlet.
(It can cause an electric shock and a fire.)



When you see smoke comes out from the product or smell something is burning or see any other strange symptoms, you have to pull out the power cord and stop using it. (It can cause an electric shock and a fire.)

1. 3 Precaution for ground connection



Please ground before use the product, if you don't ground, you can get an electrocution when malfunction or an electric leakage occurs.



At the place where you can't ground,

* Please buy the equipment to prevent any electrical leakage.

* An electric shock, an electric leakage and a fire can be occurred without an electric leakage breaker.



Do not ground to these places; Gas Pipe, water pipe, pipe, lighting rod, telephone wire etc.

* Wrong ground connection can cause electrical leakage which eventually results in fire.



If you don't have the outlet for AC 220V, then bury it under the ground after connecting the ground line to copper plate.

* No ground connection can bring an electrocution, an electric leakage and a Fire.

1. 4 Precaution for use



You must not disassemble, fix and remodel the product by yourself.

(You can damage the product throughout a fire and malfunction or get a property loss as well as experimental loss.)



Do not use the product for different purpose.

(It can cause malfunction or poor function. Consequently, you will get a wrong result.)



Do not use an inflammable spray near the product.

(The switch and other electric connection parts can cause a fire.)



When you use inflammable substances such as benzene, thinner, alcohol and LP gas, please be careful. (It can cause a fire and an explosion.)



To prevent water and experiment material from going into the control panel during the experiment, make sure to clean the control panel with a dry cloth.

(It can cause an electric leakage and a fire.)



Do not wash the product with excessive quantity of water, thinner, benzene and Petroleum. (It can cause an electric leakage, and malfunction or damage on the surface.)



When you don't use the product or clean it, please pull out the power plug.
(It is to prevent an eclectic leakage.)



Open and close the door softly and please use a door knob.
(A heavy shock can damage the product and breakdown the operating part. Also your hands can be stuck between the door and body.)



Do not detach the built-in lamp and electrical devices.
(It can cause an electric shock and a fire.)



Be sure to prevent foreign substances from getting into the sealing silicon of the door.
(The inflow of open air can cause the change of temperature in chamber and discoloration of the packing part by a foreign substance.)

2. TRANSPORTATION, STORAGE, AND LOCATION OF INSTALLATION



Caution

2. 1 Transportation



DO NOT try to slide or tilt the unit

Prohibition



Permissible ambient temperature range for transport: -10°C to 60°C.

Compliance

2. 2 Storage

Permissible ambient humidity: max. 70%



Please check the voltage & Hertz written on serial label.
(Over-voltage, under-voltage can damage the product and poor performance.)

Compliance



Do not install at a humid place.
(It causes an electric leakage accident and a corrosive of the product.)

Prohibition



Keep this product out of the direct ray of sun and do not install at a hot place or a place that is near an electric heat. (The proper indoor temperature is 20°C ~ 30°C.)

Prohibition

2. 3 Location of installation and ambient conditions



Prohibition

Do not put inflammable substances near the product.
(It can cause a fire)



Compliance

When you install the product, you have to put the distance of at least 30cm from the wall. To completely separate the unit from the power supply, power plug must be disconnected. Install the unit in the way that the power plug is easily accessible and can be easily pulled in case of danger.



Compliance

Install the unit at a flat surface, free from vibration and in a well-ventilated Location.
(If the ground is not flat, it can cause an excessive vibration of the product.)



Prohibition

When you move the product, do not lay down to its side or reverse the head to bottom.
(It can cause a malfunction.)



Compliance

When you move the product, hold the door and other movable parts of the product with a tape.
(When the product is moved, the movable door can cause injury of you and damage of the product.)



Compliance

When you move the product, you must hold up the product.
(Pushing or pulling the product can damage the bottom part of the product.)

3. FEATURE AND SPECIFICATION

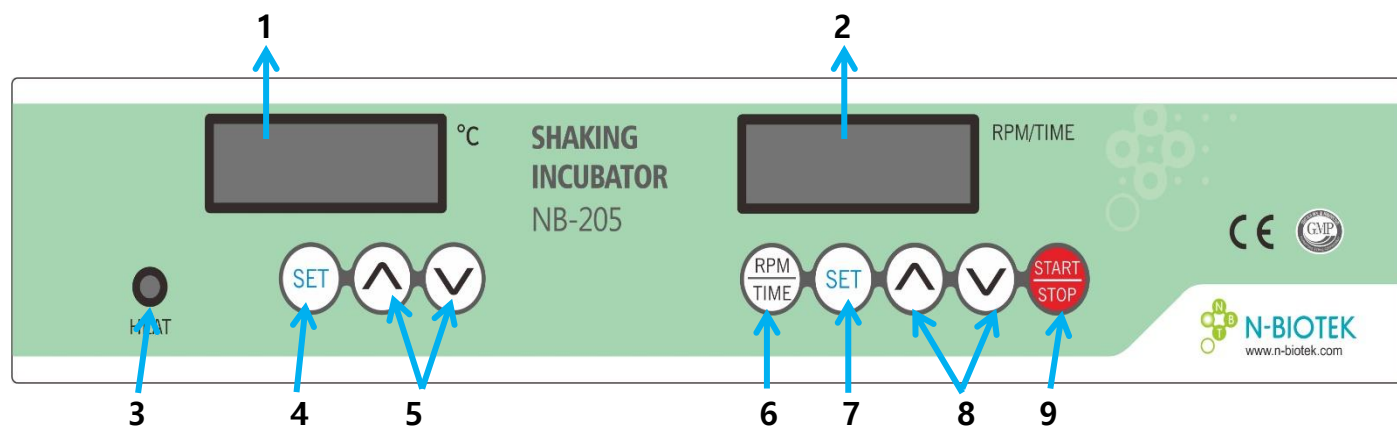
3. 1 Features

- Artificial intelligence system
Artificial intelligence system maintains precise temperature by using MICOM.
- Digital Control Panel
This displays temperature, speed, time and some error code
- Extremely compact size for the use on the table and easy transfer.
- Excellent Temperature Control
With Microprocessor and internal circulation fan, temperature in incubator is controlled accurately.
- Automatic stop function
Once LID opens, shaker automatically stops for safety and convenience.
- Once-piece construction with acrylic cover
Transparent acrylic cover allows internal viewing without disturbance.
- Stable and Low Noise Shaking
Brushless DC motor and beltless drive system for shaker minimizes noise and vibration.
- Easy - Platform Installation
Very simple way to place holder or spring rack platform on the shaker.
And Optional accessories available for most common laboratory vessels

3. 2 Specification

Items	Unit	NB-205
Temperature		
range	°C	Ambient +5°C to 60°C
accuracy	°C	±0.25°C at 37°C
increment	°C	±0.1°C
control		Microprocessor digital PID
Speed		
range	rpm	30 to 300rpm
accuracy	rpm	±1rpm
increment	rpm	±1rpm
Time		
range		Continuous or up to 47h 59min
accuracy		±1min
Motor		Plate Type Brushless DC Motor
Temp. Controller		Microprocessor Digital PID
Drive system		Beltless Direct Drive
Orbit Diameter	mm	22mm
Operating panel		Touch Button
Platform size	mm	250(W)x310(D)mm
Dimensions	mm	285(W)x400(D)x290(H)mm
Power	V/Hz	110/220V, 50/60Hz, 250W
Weight	kg	13kg

3. 3 Control Panel



1. Temperature LED Display
2. RPM LED Display
3. LED Light for HEAT
4. SETTING Button for Temperature
5. Adjustment Button(up and down) for Temperature
6. RPM / TIME Switch Button
7. SETTING Button for RPM / TIME
8. Adjustment Button(up and down) for RPM / TIME
9. START/STOP Button

4. INSTALLATION AND OPERATION

4. 1 Installation

- Choose a location that is free from rapidly changing temperature conditions (away from a heating or cooling vent).
- To assure proper ventilation and to prevent power cable from short circuit by bending, allow a minimum of 5 Cm of the clearance between the rear and side of the unit and the adjacent wall.
- Always ensure that the machine is installed on a level surface.
- Before plugging the machine into the outlet, ensure that the electrical specifications (listed on the serial number label on the rear side of the unit) matches the electrical specifications of your outlet.
- Always
 - Avoid a direct ray and light.
 - Avoid high humidity and dust air.
 - Avoid cool areas (below 5 °C).

4. 2 Operation

1) Place the Power switch “ON” position which locate by fuse in back of machine

After turn on Main S/W, The digital readout will display as below.



(a) temperature display



(b) RPM and time display

* Present temperature in the chamber display

* Above message is Controller displayed at first

2) Temperature Set-up

- (1) Place the Power switch “ON” position which locate in right side.
Then, LED screen will displayed present temperature in the chamber.
- (2) Press the “SET” key, then LED screen displayed “Set-up” temperature and flicker continually.
- (3) Then, you can set-up the new temperature using UP(▲) and DOWN(▼) key as desired set-point temperature.
- (4) Press “SET” key again after set up the new temperature as desired set-point temperature, then LED screen will be stop to flicker and saved as new temperature.
* if you don't press “SET” key after set up the new temperature, new set-up temperature will not save at all.

* Set-up temperature range is Ambient +5°C to 60°C

2-1) Temperature calibration

Pressing (▼) button for 5 seconds is to get into calibration mode for temperature.

Press UP (▲) as much as difference from measured value by precise analyzer if it is higher.

Press DOWN (▼) as much as difference from measured value by precise analyzer if it is lower.

Ex) If measured temperature is 38°C and Display shows 37°C, then press up 1°C.

3) Time Set-up

- (1) Press the "RPM/TIME" key during the approximately 1 or 2 seconds until LED displayed "T 00.00" as below.



- (2) Press the "SET" key. Then LED displays set time and can be set the time using UP(▲), DOWN(▼) key as desired set time.

At first, you can set the hour using UP(▲), DOWN(▼) key and press "SET" key.

You can set the minute using UP(▲), DOWN(▼) key after set the hour.

Press "SET" key again after set time (hour and minute), then LED displayed as "t SAVE" as below.



* Time set point range is maximum 99 hr 59 min.

If you want to use this incubator continually, you must set value as 00:00.

* If you do not press the "SET" key to store the desired time the new time will not be saved and the set time will return to the prior setting.

4) Speed (RPM) Set-up

- (1) In the beginning, press the "RPM/TIME" key for 1 or 2 seconds until LED blinks then put desired RPM value by using UP(▲), DOWN(▼) key and press "SET" button to save RPM.

* RPM setting range is from 30 to 300.



* If you do not press the "SET" button for saving, then new RPM will not be applied but it will operate with old RPM speed.

(2) You can also set RPM during shaking operation by pressing UP(▲), DOWN(▼) key without stop. In this case, no need to save the value as it will automatically adjust to new RPM value.

5. WARNING MESSAGES



1) This message may be displayed as to

- RPM is being set "0" or less than minimum RPM.
- Something forced not to move when the platform is moving.
- Solution : Use your hands to move platform and push "STOP" button simultaneously and then push the "SET" button to increase RPM you want.



2) This message may be displayed as to

- Momentary noise symptom.
- When the platform is being moved faster than RPM which you set.
(This message may occur from 200 RPM)
- Solution : These symptom will be recovered automatically within 3 min or restart it.



3) This message may be displayed as to

- Finish operation after "TIME" Setting Mode.



4) This message may be displayed as to

- The electricity is on from power failure during "TIME" Setting Mode.
- Solution : Push the "START" button once again.



5) This message may be marked as to

- The electricity is off during operation.
- Solution : "n"(new record) will be changed to "r"(RPM) if you push "START" button.

6. SERVICE AND CHECK POINT



Warning

Service should be only performed by qualified service personnel

Before replacing any electrical or mechanical components, disconnection unit from its electrical power source. If electrical power is required for service exercise extreme caution as LINE VOLTAGE is present.

1) Unit is not working (Check below before thinking this as malfunction)

(1) Electrical connection

Please disconnect main power cable and then reconnect.

(2) Voltage supply

Please check to voltage.

(3) Fuse check.

(4) Verify voltage on unit.

(5) Defective power switch (check voltage at switch)

Please contact N-BIOTEK Technical Service or your local retailer for any enquires and service issues.

Thank you for purchasing our Shaking Incubator.

This operation manual describes practical information such as performance, usage, and cautions and notices for use of the product. Prior to using the product, please read it carefully all the safety instructions described in this manual and keep this manual near equipment.

WARRANTY

ITEM	Mini-Benchtop Shaking Incubator	MODEL	NB-205
DATE OF INSTALLATION	mm-dd-year	SUPPLIER	
SERIAL NO.		PERIOD	1 year

N-BIOTEK provides a warranty on all parts and factory workmanship. The warranty includes areas of defective material and workmanship, provided such defect results from normal and proper use of the equipment.

1. The free warranty service will be provided once the unit is proved to be defective by wrong workmanship after N-BIOTEK or reliable distributor's examination.
2. The warranty period is 1 year from date of installation or 18 months from the date of shipment from N-BIOTEK, whichever is sooner as indicated in above table. This period is proved by serial no.
3. N-BIOTEK will not be responsible of free warranty service for the faulty caused by user's improper operation, excessive use, use of incorrect voltage & frequency, storage in wrong environment mentioned in Manual.
4. Complete the above table after installation and keep this card. Then, present it to a dealer or N-BIOTEK when warranty repair is needed.

Signed By



President Daeyong Kim
N-BIOTEK,INC.