

# *Shaking Incubator Operation Manual*

Model: NB205V, NB205VL



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## ● Warranty

Thank you for choosing N-BIOTEK product.

This operation manual describes practical information such as performance, usage, cautions and notices for use of the product.

So, before using the product, please read it carefully all the safety instructions described in this manual and keep this manual for future use.

<b>Model</b>			
<b>Date of Installation</b>	mm-dd-year	<b>Supplier</b>	
<b>Serial NO.</b>		<b>Period</b>	1 year

N-BIOTEK product is warranted from defect in all parts and workmanship. This product is warranted for 1 (one) year against faulty components and assembly. Our obligation under warranty is limited to repairing and replacing the instrument or part after our examination.

This warranty does not extend to any N-BIOTEK products which has been misused, neglected, accident or mis-installation, application.

1. The free warranty service will be provided once the unit is proved to be defective by wrong workmanship after NBIOTEK or reliable distributor's examination.
2. The warranty period is 1 year from date of installation or 1 and Half year from the date of shipment from NBIOTEK, whichever is sooner as indicated in above table. This period is proved by serial number.
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.

## ● 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

Other marks..



**Warning**



**Caution**



**Compliance**



**Prohibition**



**No disassemble**



**Remove plug**



**Ground**

### 1. Precaution for using the power cable



**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)

Clean the power plug with a dry towel and connect it properly.

(Foreign substances or unsafe connection can cause a fire.)



**Prohibition**

Do not bend the power cable hardly 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 code with wet hands.(It can cause an electric shock.)



**Prohibition**

Do not use the damaged power code and outlet.

(It can cause an electric shock and a fire)



**Remove plug**

When you see smoke coming from the product or smell something is

burning or see any other strange symptoms, you have to pull out the power

code and stop using it. (It can cause an electric shock and a fire.)

## 2. Precaution for ground connection



Compliance

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



Compliance

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.



Prohibition

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



Compliance

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.

## 3. Precaution for use



No disassemble

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.)



Prohibition

Do not use the product for different purpose.

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



Prohibition

Do not use an flammable spray near the product.

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



Prohibition

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



Compliance

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.)



Compliance

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.)



Compliance

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



Compliance

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.)



Compliance

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



Compliance

Please 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.)

## ● Transportation, Storage and Location of Installation

### 1. Transportation



Prohibition

DO NOT try to slide or tilt the unit



Compliance

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

### 2. Storage



Compliance

Do not keep it at Place in High Humidity. Permissible ambient humidity: max. 70%  
storage in a cold location is the place you transfer the unit to the installation site for  
start-up, condensation may form. In this case, Wait at least one hour until the CO2  
incubator has attained temperature and is completely dry.



Compliance

**Please check the voltage & Hertz written on serial label.**

(Over-voltage, under-voltage can damage the product and poor performance.)



Prohibition

Do not install in 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 room temperature is 20°C ~ 30°C.)

### 3. Location of installation and ambient conditions



Prohibition

Do not put flammable 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.)



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.)



Compliance

CO<sub>2</sub>, as well as O<sub>2</sub>, and N<sub>2</sub> are harmful in human when in high concentrations. Any excess has to be led out via good room ventilation or by connection to a suitable exhaust system.



Prohibition

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

## ● Prerequisite and Configuration

### 1. Prerequisite

#### Inspection of Boxes

When you have received the instrument which is packed on pallet, inspect the box carefully for any damages that may have caused any damages to product during shipping. Please report any damage to the carrier or to your local NBIOTEK distributor immediately.

#### Location

The incubator is designed to operate at temperature from 0°C to 60°C, and recommended to operate at minimum ambient(temperature in the place for use), 15°C. Maximum Room Temperature is 32°C.

To avoid place for use this incubator is as below.

1. Near Heater or Freezer(if it may generate heat and affect temperature control of incubator)
2. Near Equipment generating heat or cold air to incubator.
3. Directly Sunlight Exposed to incubator
4. Uneven ground or table head
5. The place where is being vibrated
6. Too narrow to use lift handle(at side of bottom) and power cable of incubator.

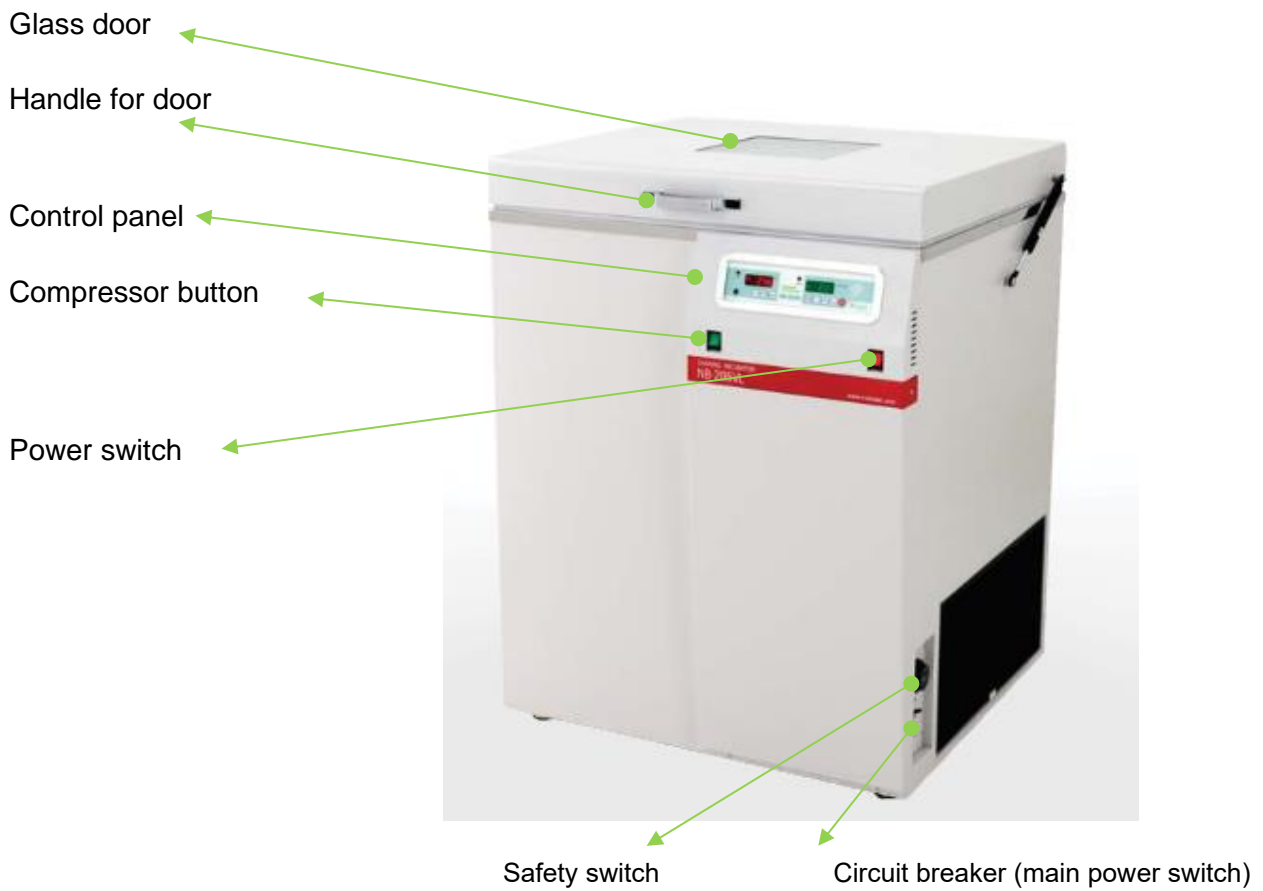
#### Cleaning before use

Before conducting cell culture, It is recommended to clean up entire chamber and shelves, water tray by using at least 70% Ethanol mixed of 30% distilled water and soft clothes.

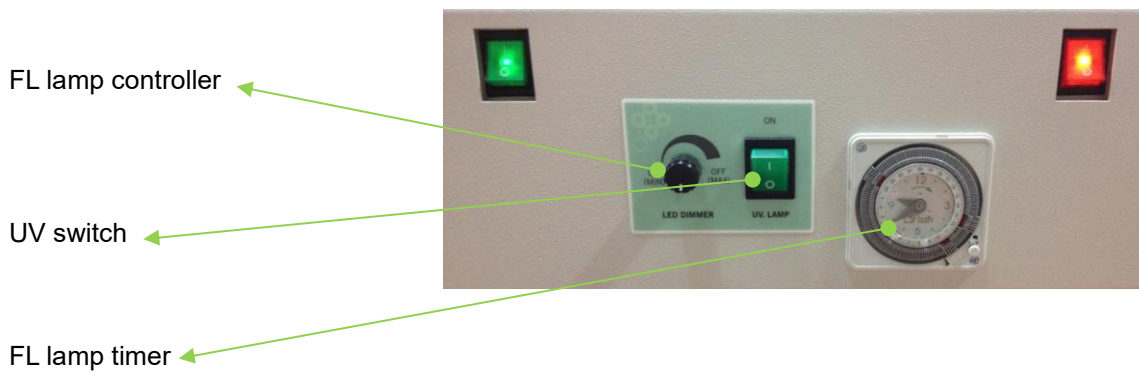


## 2. Configuration.

<Figure #1>



<Figure #2, Chargeable Additional Factory Option Model>



## ● Feature and Specification

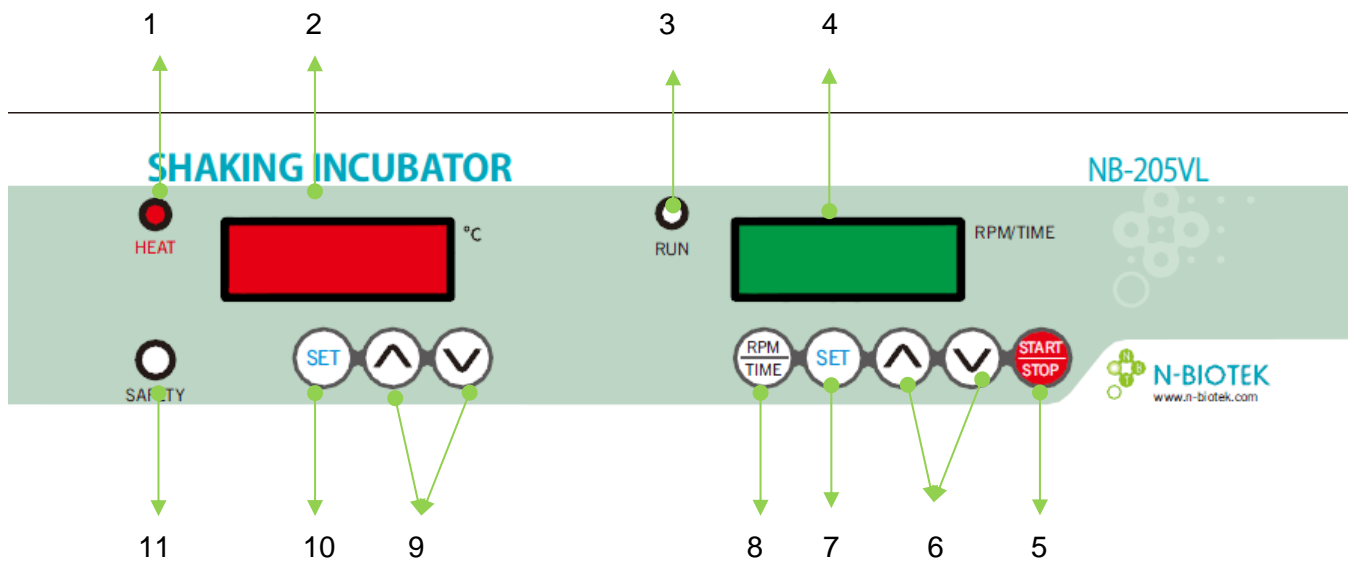
### 1. Feature

1. Cooling function (from 4°C to 60°C)
2. Chest type door open for simple access to chamber.
3. BLDC motor system.
4. Automatic stop when door open.
5. Glass door to check inside.
6. UV, FL lamp system (optional)

### 2. Specification

Items	Unit	NB-205V	NB-205VL
<b>Temperature</b>			
range	°C	4°C to 60°C	4°C to 60°C
accuracy	°C	±0.25°C at 37°C	±0.25°C at 37°C
increment	°C	0.1°C	0.1°C
control		Microprocessor digital PID	Microprocessor digital PID
<b>SPEED</b>			
range	rpm	30 to 300rpm	30 to 300rpm
accuracy	rpm	±1 rpm	±1rpm
increment	rpm	1rpm	1rpm
<b>Time</b>			
range		Continuous or up to 47h 59min	Continuous or up to 47h 59min
accuracy		±1%	±1%
<b>Door safety</b>		Auto-stop when door is open	Auto-stop when door is open
<b>Motor</b>		Plate Type Brushless DC Motor	Plate Type Brushless DC Motor
<b>Orbit Diameter</b>	mm	22mm	22mm
<b>Operating panel</b>		Touch Button	Touch Button
<b>Cooling</b>		1/4HP Compressor	1/4HP Compressor
<b>Platform size</b>	mm	450(W)x450(D)mm	720(W)x610(D)mm
<b>Dust filter</b>		Attached side filter	Attached side filter
<b>Dimensions</b>	mm	600(W)x660(D)x995(H)mm	820(W)x765(D)x1018(H)mm
<b>Power</b>	V/Hz	110/220V, 50/60Hz, 1.5kW	110/220V, 50/60Hz, 1.7kW
<b>Weight</b>	kg	106kg	150kg
<b>Optional</b>		Internal illumination	Internal illumination

## ● Control Panel



1. Heating pilot lamp : is to show heating activation.
2. Temperature LED display
3. RUN pilot lamp : it is on as long as shaker working.
4. RPM.TIME LED display.
5. START / STOP button
6. Adjustment button
7. SET button for RPM and TIME
8. RPM / TIME selection button.
9. Adjustment button
10. SET button for temperature.
11. Safety switch pilot lamp.

## ● Operation

### 1 Power switch on

Set the main power switch to ON position then turn on power switch in red button below control panel. Below digital readout will appear.



(a)temperature display



(b)RPM and timedisplay

### 2 Temperature SET-UP

#### 2-1 Temperature SET-UP

Press SET button on temperature side and set desired temperature value range from 0°C to 60°C Press SET button after you set it up to save the value. If no save message appears, it is not saved. Therefore, make sure to press SET button after you have set up the temperature.

For example)



Note : At 5<sup>th</sup> digit, you will see a bar vertically. This means nothing that you can ignore it.

#### 2-2 Compressor

Green button is for compressor.

If operating temperature is needed to be below ambient, please turn on CHAMBER to activate compressor. Otherwise compressor remains off for longer life span.



Note : If no option for UV, FL lamp, timer take, there are only compressor and power switch.

## 2-3 Temperature Calibration

Please follow up below procedure for calibration in case of discrepancy between actual value (measured by reliable measurement device) in chamber and displayed value.

- (1) Press DOWN(▼) button from temperature for more than 5 seconds.

Then below message will appear.



- (2) 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 RPM / TIME SET-UP

### 3-1 RPM SET-UP

- (1) Press the "RPM/TIME" key to input our desired RPM value.

At first, stop the shaker in order to activate the RPM/TIME button.



Warning

Don't set RPM below 30.

- (2) Set your desired value for time by UP(▲), DOWN(▼) key then press SET button to save.

\* RPM setting range is from 30 to 300.



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

\* 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.

### 3-2 TIME SET-UP

(1) Press the "RPM/TIME" key then below message will appear.



(2) Set your desired value for time by UP(▲), DOWN(▼) key.

First 2 digits is hour and last 2 digits is minute.

Press "SET" key again to save your desired time then below message will appear.



\* Time set point range is maximum 99 hours 59 min.

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

### 4 Safety switch

It is the safety device to prevent the heater from overheating when the temperature controller is malfunctioning.



- Set the Safety S/W higher than setting point.
- The Safety S/W has wide deviation
- Safety S/W is the safety device for preventing the heater to overheat when TEMP. CONTROL is malfunctioning

## 5 FL lamp and UV lamp (OPTIONAL)

### 5-1 FL lamp

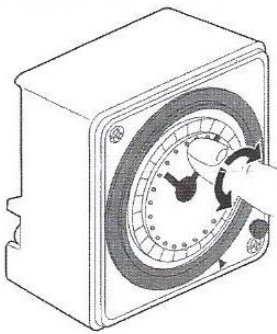
FL lamp can generate 5000 lux and it is adjustable by FL lamp controller meaning you can set lux with lux measurement device.



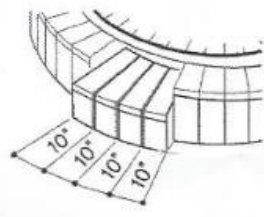
FL lamp timer



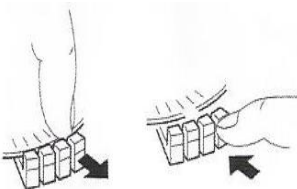
### 5-2 FL lamp timer set-up



1 Turn the timer cover, transparent part, to clockwise and set it up current time. The current time should be in line with arrow position.  
\* arrow position for current time set up



2 There are pins on the timer from 1 to 24 meaning 24 hours. (1 ~ 12 means day time, 13 ~ 24 means night time)  
Each pin is 10 minute.



3. FL light is on as long as pin is pulled and shows red.  
See a picture on your left. The left shows you lamp ON position.  
Right shows you OFF position.



4 When I is set, FL is on if it is turned on.  
When O is set, FL is off even though it is turned on.  
But timer activates at either position.

### 5-3 UV lamp

UV switch is right next to FL lamp controller.

Be informed that you are strongly required not to see the UV light directly. It will cause a damage to your sight.

UV lamp is installed at the back of main door with FL lamp.

Note : FL lamp and UV lamp page is for option.

Manufactured by : N-BIOTEK, Inc  
Techno park 402-803 Yakdae Dong, Wonmi Gu, Bucheon si  
Gyeonggi province Korea, Republic of  
Tel : +82 321 2100 E-mail : export@n-biotek.com