

# **OPERATION MANUAL**

**Model : Orbital Shaker**

**With Remote Control**

**(NB-101SRC / NB-101MRC)**



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## **I. General Information**

***NOTE : Before operating Mini shaker with remote control, please take a few minutes to familiarize yourself with the contents of this manual.***

**Thank you for purchasing *Mini shaker with remote control*. This operations manual contains instructions for the care of this Instrument. In order to use the instrument properly, please read this manual carefully before operation. Please keep it available for future use.**

**Prior to the initial operation:**

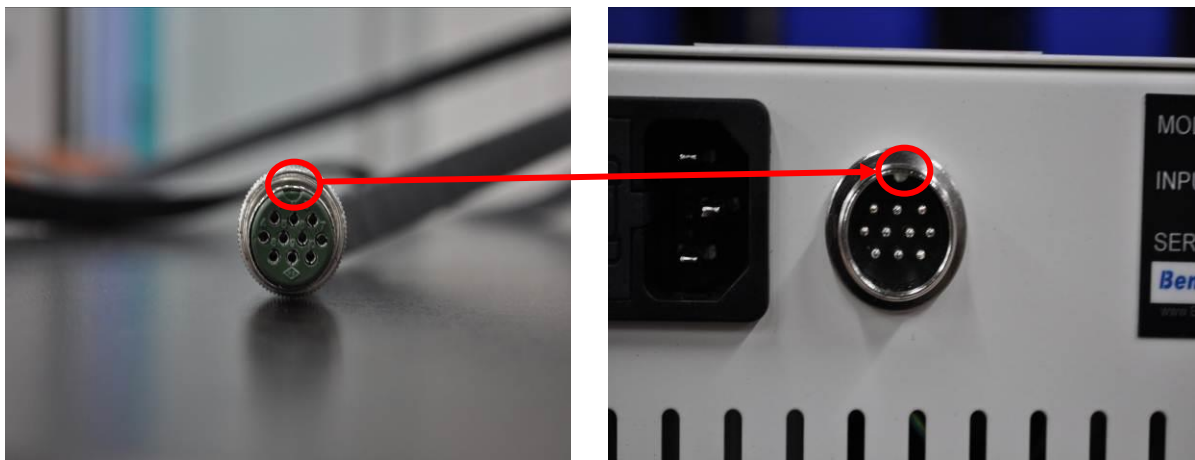
**Please check the Instrument and the accessories when you first open the shipping carton. If you find there is damage, a discrepancy, or missing items, contact your supplier immediately.**

### **II-1. Introduction**

Mini shaker with wired remote control is designed for the use in Incubator used in general research laboratories, especially suspension cell culture. The Microprocessor's constant monitoring system ensures accurate shaking speed. The beltless drive system minimizes noise and vibration while increasing the life span of the unit. Optional accessories are available for compatibility with a wide variety of laboratory vessels, including flasks, tubes, dishes and trays.

## II-2. Installation

- Choose a location that is free from rapidly changing temperature conditions (away from a heating or cooling vent).
- To assure proper ventilation, 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.
- In case of cable connection, after checking numbers indicated in its connector socket, please match cable connector's hole with the pin of connector in equipment. Do not connect or disconnect when remote box power is on.



<Connector Socket in Cable(left) and Remote Control Box>

- 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 dust air.
  - Avoid connecting Shaker with Control before turning on the main power (It causes unexpected error)
  - Avoid discordance between Shaker's voltage and Incubator's voltage

- Place the remote control box out of incubator or instrument which the shaker is placed in. Locate remote box at flat surface like a table near incubator, top of incubator or attach remote box on the wall of incubator, chamber with magnets. Or remote box can be hung by included plastic strap which can be installed into vent hole of remote box like photos below.



**\*Insert** the both edge of plastic strap into vent hole of remote control box.



<Hanging with Hook>

**\*Hook is not provided in package.**



<Attachment with magnetics>

## II-3. Specification

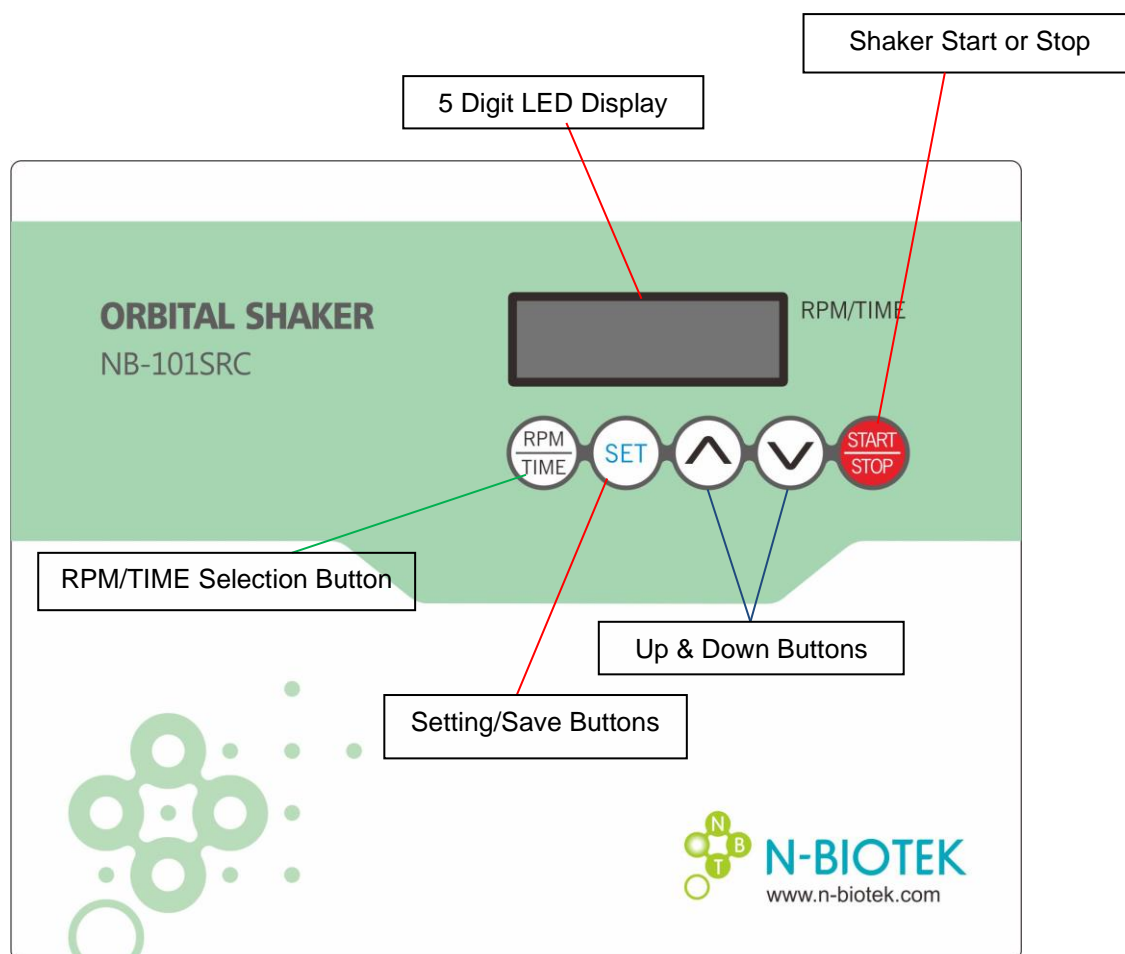
Items	Unit	NB-101SRC	NB-101MRC
Motion		Orbital	
Speed range		30~300rpm(No Load)	
Accuracy	rpm	$\pm 1$ rpm	
Orbital diameter	mm	22mm	
Time Range		Continuous or up to 47hours 59min	
Time Increment		1 minute	
Control		Microprocessor Digital	
Motor		Brushless DC Motor	
Drive System		Magnetic Drive	
Display		LED display	
Control box Size / weight	mm	190Wx50Lx140(H)mm/2kg	
Shaker size		305x350x85(H)mm	465x540x125(H)mm
Platform Size	mm	300x330mm	460x455mm
Weight		7.5kg	35kg
Power		110/220V	50/60Hz
Load Capacity		NB101SRC	NB101MRC
100ml		16ea	36ea
250m		9ea	23ea
500ml		5ea	16ea
1000ml		4ea	9ea
2000ml		1ea	4ea

## II-4. Features

- 1) Constant Monitoring System (CMS) ensures precise control over speed.
- 2) Extremely compact.
- 3) Brushless DC motor and beltless drive system minimizes noise and Vibration.
- 4) Digital control panel displays speed and time.
- 5) Wide variety of optional accessories available for most common laboratory Vessels.
- 6) In Incubator, convenient control without opening door.
- 7) Indicator lamp for shaker run which is proportional to RPM speed.

## III-1. Operation

### III-1.1. Control



- 1) Install the Shaker in the proper place of Incubator or any container.
- 2) Place the power switch (located on the rear of the controller) in the "ON" position (the display will illuminate).
- 3) To set the desired time, Press and hold the "RPM/TIME" key for approximately 2 seconds until **LED** displays "t" followed by the current set time. Press the "SET" key located underneath the time/speed display. The set time is displayed and will blink continuously. It can be adjusted by using the UP (▲) and DOWN (▼) keys. Once the desired time is displayed, press the "SET" key to confirm.  
\* 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) To set the desired mixing speed, Press and hold the "RPM/TIME" key for approximately 2 seconds until **LED** displays "r" followed by the current set mixing speed. Press the "SET" key located underneath the time/speed display. The set

speed is displayed and will blink continuously. It can be adjusted by using the UP (▲) and DOWN (▼) keys. Once the desired speed is displayed, press the “SET” key to confirm.

\* 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.

### III-2. Error Messages



1) This message “rErrL” represents a low speed error.

- Check the platform to ensure that nothing is obstructing its movement.
- Check the set speed to make sure that it is within the acceptable range (30 to 300rpm)

**Solution** : Use your hand to move platform. While the platform is moving press and hold the "STOP" and "SET" keys simultaneously.



2) This message “rErrH” represents a high speed error.

- Removal of load or partial load.

**Solution** : If a vessel has been removed, replace the vessel or restart the machine.



3) This message, “Error” represents an electrical error.

- Machine has lost power during the run.

**Solution** : Check that the power cord is properly installed and restart or check that the circuit has not been interrupted and restart.



#### 4) Display will not illuminate

- (1) Electrical connection - Please disconnect main power cord and connect again.
- (2) Voltage supply - Please check to voltage.
- (3) Check the fuse.
- (4) Verify voltage on the serial number label of the machine.
- (5) Defective power switch. (check voltage at switch)

### III-3. Maintenance

**The platform of Mini shaker with remote control should be cleaned regularly with a soft cloth dampened with water or alcohol. (Always ensure that the machine has been powered down prior to cleaning.)**

In the event of a spillage: Power down the unit, remove the platform and dry the internal chamber with a soft cloth. **DO NOT** attempt to operate the unit until the spillage had been properly dried.

### IV-1. Service and Contact

Service on Mini shaker with remote control should only be performed by qualified service personnel. To request service or technical support, please contact **N-BIOTEK** or your local N-BIOTEK representative.



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