

# Smart Mixer, Multi Shaker

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**Cat. No. BT905**

Thanks for choosing BT Lab Systems' BT905 Smart Mixer, Multi Shaker. This operation manual describes the function and operation of the instrument. In order to use the instrument properly, please read this manual carefully.

Please check the instrument with the packing list when you first open the packing case. If items do not match the packing list, please contact BT Lab Systems.

### **IMPORTANT SAFETY INFORMATION**

Users should understand how to use the instrument properly before operating it. Please read this operation manual carefully before using the instrument.

The operation, maintenance and repair of the instrument should comply with the basic guidelines and warning below. Ignoring these instructions will affect the life of the Instrument and safety precautions.

- This product is an indoor Instrument which conforms to Standard B style- I type- GB9706.1.
- Before operation, read the manual carefully. These units are designed for using in laboratory environments by persons knowledgeable in safe laboratory practices.
- The operator should never open or repair the instrument. Opening or repairing the instrument will void the guarantee and can cause accidents.
- Before turning power on, check that the outlet is the correct voltage. Hold the plug when you pull out the electrical cord, and don't pull the electrical cord.
- In case of the following, unplug the instrument at once and contact BT Lab Systems.
  - The instrument comes into contact with liquid
  - The instrument gets soaked or burned
  - The instrument emits an abnormal sound or smell
  - The instrument is dropped or the outer shell damaged
  - The instrument functions abnormally.

### **MAINTENANCE**

The instrument and the accessories should be cleaned with a cloth dampened by alcohol. If there are smudges on the instrument, clean it with a dry cloth.

## INTRODUCTION

The BT905 Smart Mixer Multi Shaker allows aqueous solutions and suspensions to be effective in a wide range of micro test tubes or plates. The BT905 Smart Mixer Multi Shaker supports 0.2ml PCR tubes to 2.0ml micro test tubes as well as plates, up to 384 wells plates.

## KEY FEATURES

- 2D Mix-control, optimized incubating, anti-spill technology.
- High stability: Tested and designed for stability during mixing.
- 3-in-1 format allows flexibility.
- Preprogrammed soft keys.
- Reliable universal holder.
- Extremely quiet operation.
- User friendly, ergonomic touch operation. LED readout displays time and speed.
- DC brushless motor: Precise speed, long life, maintenance-free.

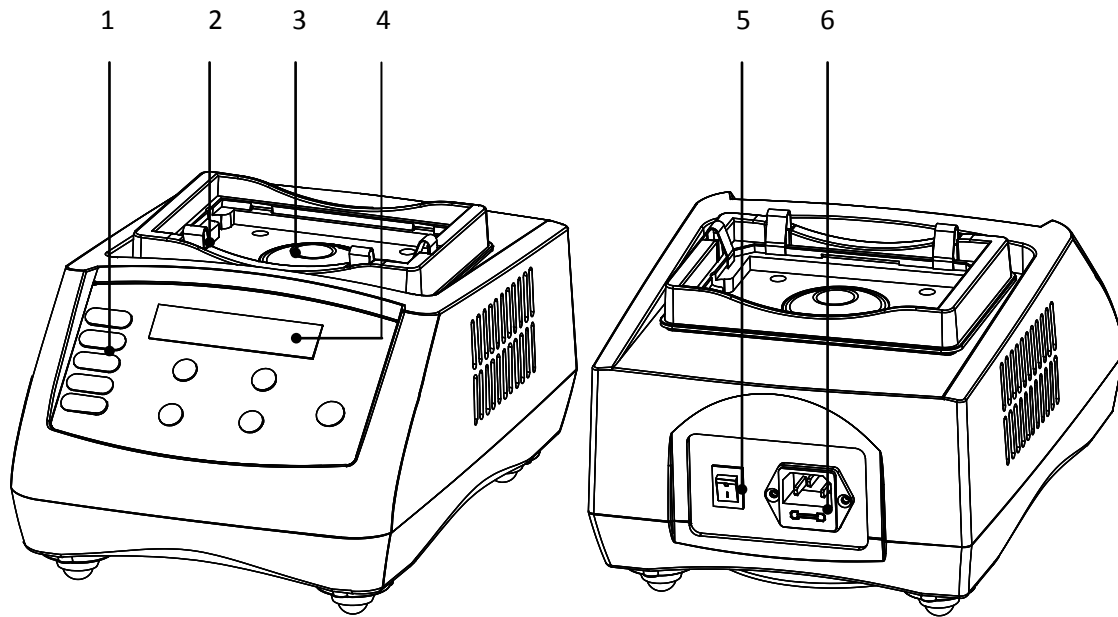
## NORMAL OPERATING CONDITIONS

- Ambient Temperature: 4°C ~45°C
- Relative Humidity: ≤70%
- Power: AC100-230V, 50/60Hz

## TECHNICAL SPECIFICATIONS

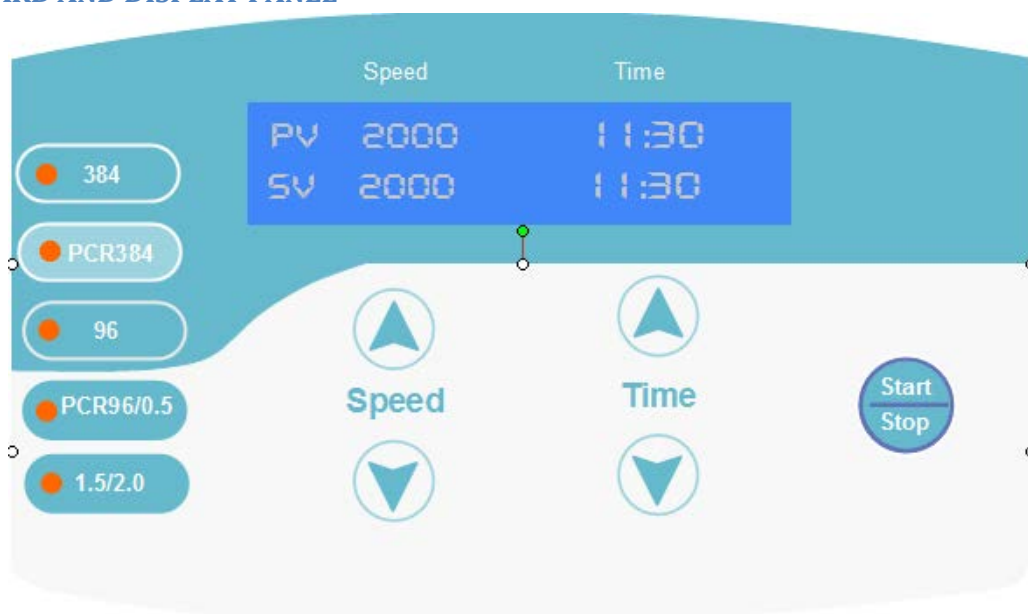
- Speed Range: 300 ~3000 rpm (10rpm increment)
- Touch Vortexing Frequency: 3500rpm
- Time Range: 1s ~99h59min
- Shaking Orbit: 1.5mm (3mm mixing stroke)
- Working Noise: <50 db
- Power : 40W
- Weight: 7.7 Kgs
- Dimension (LxWxH): 270 x 196 x 170 mm

## EQUIPMENT OVERVIEW



1. Soft keys: Features a separate button for each type of sample tube/plate. Press the corresponding button, it will automatically read out the best frequency/time blending.
2. Plate holder: Base contains three stainless steel posts, ensure all test tube/plates are secured in the posts and stable.
3. Vortexing mat: For direct vortexing of various tubes.
4. LED display: Displays mixing frequency and mixing time.
5. Main power switch: To switch the device on and off. "I" is off, "O" is on.
6. Power input : AC110~230V, 50/60Hz

## KEYBOARD AND DISPLAY PANEL

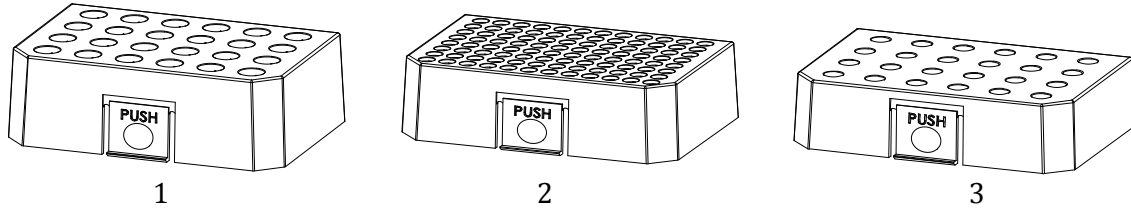


1. Press Start/stop button to start/stop mixing run
2. Press button with upward pointing arrow to set and increase speed and time.
3. Press button with downward pointing arrow to set and decrease speed and time.

Soft key	Speed(rpm)	Time(S)	Tube/Plate	Fill level(%)
384	2000	15	MTP and DWP (384 well)	10-60
PCR 384	2600	15	PCR Plate (384 well)	10-50
96	1000	30	MTP(96 well)	5-60
PCR 96/0.5	1650	30	PCR tubes(0.2ml) and micro test tubes (0.5ml)	5-50
1.5/2.0	1400	60	micro test tubes (1.5/2.0ml)	5-80

**Note:** After selecting the soft key, press “Start” button to run.

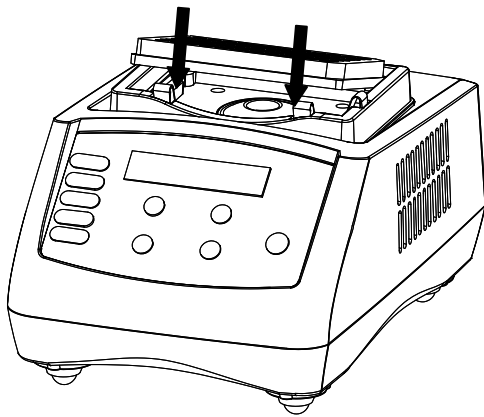
## OPTIONAL TUBE HOLDER



1. 1.5/2.0ml tube holder: for max. 24 micro test tubes (1.5 and 2.0ml)
2. PCR 96 tube holder: For one PCR plate (96-well, semi-skirted or un-skirted) or a max. of 96 micro test tubes (0.2ml)
3. 0.5ml tube holder: For max. 24 micro test tubes (0.5ml)

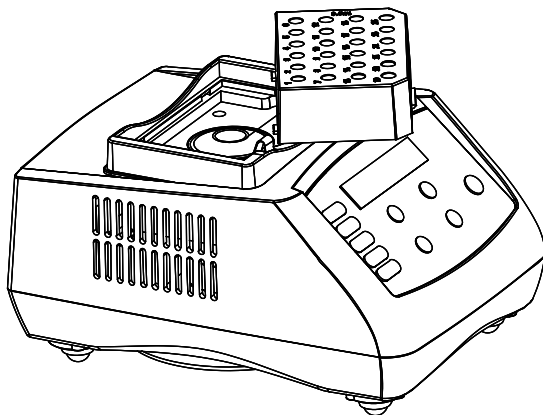
## INSERT PLATE IN THE PLATE HOLDER

1. Place the plate up against the back of the plate holder.
2. Press the plate into the plate holder, ensure that it is properly engaged.

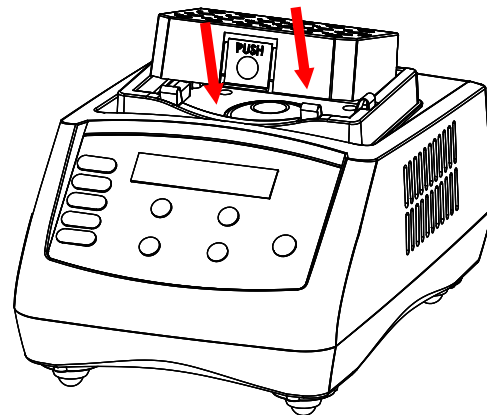


## INSERT THE TUBE HOLDER IN THE PLATE HOLDER

1. Hold the tube holder up against the back edge of the plate holder so that the engaging lugs fit in the holes. (See fig. a)
2. Engage the tube holder by pressing gently on the front. (See fig. b)



a



b

## OPERATION GUIDE

### Speed and time setting

1. When the instrument is turned on, the display screen will show “ ... ”. The instrument starts with a beep.
2. After 2 seconds, time display window shows 10: 00. It means that the set time is 10 hours. The speed display window shows 600. It means the set shaking speed is 600rpm.
3. Press the  $\triangle$  or  $\nabla$  key, the set value will increase or decrease in increments of 10, 100 and 1000. For instance, press the key and hold on for 2 seconds, the display will be change from 10s to 100s. If you press the key for 2 seconds again, the display will be change from `100s to 1000s quickly. Press the key “stop/start”, the device will run the preset setting.

### Touch-Vortex mode with 3500rpm

To start vortexing mode hold the tube in the depression in the vortexing mat. Remove the tube from the vortexing mat to end the Touch-Vortex mode.

### Key combination

Time unit switch mode: Press the time  $\triangle$  key and  $\nabla$  key simultaneously to switch time unit from hours/minutes to minutes/seconds, the display flickers 3 times, then saves automatically. Switch from minutes/seconds to hours/minutes the same way.

Note: While the instrument is running, Touch-Vortex, Shortcut Keys and Key combination cannot be used.

## TROUBLESHOOTING

Problem	Cause	Remedy
Display window doesn't respond after turning on	Power supply interrupted	Check the power supply
Shaking too heavily	Mixing load is too heavy for the selected mixing frequency.	Reduce the mixing frequency or the weight of the mixing load
	Mixing load not properly positioned in the plate holder.	Check that the mixing load is fixed in position.
	Continuous vortexing at frequencies >2000rpm.	Reduce the continuous vortexing frequency to $\leq 2000$ rpm.
The actual speed is different from the displayed speed	Broken sensor or loose module contact.	Contact BT Lab Systems.
“ERR” in the display	Shaking speed is not working.	Contact BT Lab Systems.
Button does not work	Button failure	Contact BT Lab Systems.

## WARRANTY

The BT905 Smart Mixer, Multi Shaker is warranted against defects in materials and workmanship for 1 year. If any defects occur in the instrument or accessories during this warranty period, BT Lab Systems will repair or replace the defective parts at its discretion without charge. The following defects, however, are specifically excluded:

1. Defects caused by improper operation.
2. Repair or modification done by anyone other than BT Lab Systems or an authorized agent.
3. Damage caused by substituting alternative parts.
4. Use of fittings or spare parts supplied by anyone other than BT Lab Systems.
5. Damage caused by accident or misuse.
6. Damage caused by disaster.
7. Corrosion caused by improper solvent or sample.

This warranty does not apply to parts listed below:

1. Fuses
2. Lamps
3. Starters

For any inquiry or request for repair service, contact your local BT Lab Systems office. Inform BT Lab Systems of the model and serial number of your instrument.

## REGULATORY NOTICE

**IMPORTANT:** This BT Lab Systems instrument is designed and certified to meet safety standards and EMC regulations. Certified products are safe to use when operated in accordance with the instruction manual. This instrument should not be modified or altered in any way. Alteration of this instrument will:

1. Void the manufacturer's warranty
2. Void the safety and EMC certification
3. Create a potential safety hazard

BT Lab Systems is not responsible for any injury or damage caused by the use of this instrument for purposes other than those for which it is intended, or by modifications of the instrument not performed by BT Lab Systems or an authorized agent.

## TECHNICAL SUPPORT

BT Lab Systems offers technical support for all of its products. If you have any questions about the product's use or, operation, please contact BT Lab Systems at the following:

E-Mail: [info@BTLabSystems.com](mailto:info@BTLabSystems.com)