MBRT

User Manual

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1. Getting Started

The MBRT is a benchtop instrument, built for quick screening of the microbial quality of raw and pasteurized milk. It is intended for use at milk collection centres, chilling centres, dairy plants, and quality control laboratories.

1.1 Working Concept

The MBRT operates on the principle of absorbance photometry, with methylene blue serving as the indicator dye. Once methylene blue is added to a milk sample, microbial activity in the milk gradually reduces the dye and causes it to lose its colour. The instrument tracks the kinetics of this reduction and decolourisation continuously through its optical sensors and uses this data to predict the microbial quality of the sample early on — long before the endpoint of the conventional Methylene Blue Reduction Test (MBRT) becomes visible to the naked eye. As a result, it delivers results considerably faster than the traditional manual MBRT method, and because it does not rely on visual interpretation, the results remain objective and reproducible.

1.2 Power Requirements

- Input Voltage / Current: 12V / 10A
- Peak Power Consumption: 60 W
- A dedicated power adaptor is provided in the box. Power the machine only with this adaptor.
- Plug the adaptor into a stable, properly earthed AC mains socket. Do not use extension boards that have a fluctuating supply.

1.3 What's in the Box

- MBRT instrument
- Power adaptor (as specified above)

1.4 General Description

- 16 test channels that allow samples to be screened simultaneously
- Touchscreen display for operating the instrument and viewing results
- Works with cow, buffalo, and mixed milk
- Keeps the incubation temperature under control at 37.0°C ± 0.5°C
- Connects through USB and Wi-Fi
- Compact size: 260x240x205 mm; weight of approximately 5.6 kg

2. How to Use

Follow the steps below to set up the MBRT instrument and start using it.

1. Set the instrument on a stable, level, vibration-free surface, away from direct sunlight and drafts.
2. Attach the supplied power adaptor to the power input port of the instrument.

3. Plug the adaptor into a mains power socket, then turn on the power switch on the machine.
4. Let the machine finish its startup sequence — the touchscreen display switches on and initializes by itself. Do not switch off the instrument while this is happening.
5. When the display has finished setting up, let the instrument warm up for about 30 minutes so that the internal incubation chamber reaches its operating temperature of 37°C.
6. Before running any samples, confirm that the chamber has reached 37°C using a calibrated thermometer. See Section 4 (Temperature Verification) for the detailed procedure.
7. After the temperature is confirmed, go ahead and load the samples and start testing.

> **NOTE:** Do not start testing samples until the 30-minute warm-up is over and the chamber temperature has been verified. Testing at an incorrect temperature can give inaccurate results.

3. Wi-Fi Connectivity

The MBRT instrument can be connected to a local Wi-Fi network for data communication.

3.1 Connecting to Wi-Fi

1. On the home screen of the instrument's touchscreen, tap the Wi-Fi icon.
2. Allow the machine to scan for nearby networks. If your required network (SSID) does not appear, press “REFRESH” to scan again.
3. Choose your required network (SSID) from the list of available networks and press connect.
4. Type in the password and press connect once more.
5. After you press connect, the status will appear as connecting at the bottom of the screen. Once the connection succeeds, it will change to connected.

4. Temperature Verification

Checking the temperature of the incubation chamber helps ensure accurate and reliable test results. Follow the steps below to check the temperature:

1. Take a clean test tube and fill it halfway with water.

2. Put the test tube into any channel, then place a calibrated thermometer in the test tube. Wait a few minutes for the reading to stabilise.

3. When the reading is stable, compare it with the acceptable range:

- **Within 36.5 °C – 37.5 °C:** The chamber is working correctly, and you can go ahead with testing.
- **Outside this range:** Inform the concerned person and report the temperature deviation.

5. Data Export

Test results saved in the machine can be exported to a pen drive for record-keeping and further analysis. Follow the steps below to export the data:

1. Connect the pen drive to the system.
2. Once the pen drive is connected, press settings in the top right corner.
3. In settings, press on Data Transfer.
4. Press Select USB Drive.
5. The name of the pen drive will be displayed. Press on it to select the pen drive you want to export.
6. After you press the pen drive, it will appear as the selected pen drive. Now press on Date filter and in that if you want current date's data then press on Today. If you want any other day's data press on custom and select the date from the calendar and press on apply. After that again press on Apply filter.
7. You will see below the export results number of sessions will be ready. Now press Export Results.
8. Once you press export results data, the data will begin downloading to your pen drive.
9. Once export is completed you can now remove the pen drive from the system.
10. Plug the pen drive into your PC/laptop and transfer the data from it into your folder.

6. Date And Time

The machine's date and time settings make sure that test results are logged with accurate timestamps. Follow the steps below to change the date and time:

> **NOTE:** Do not change the date and time while a test is running. Do this only before a test begins or after it has finished.

To set the date and time,

1. Go to Settings by clicking the Settings button in the top right corner of the screen.
2. On the Settings screen, click the Date and Time button.
3. Now on the Date and Time screen, we can set and read the date.
4. To set date press on select date and select from the select from the calendar the date you want.
5. To Set time press on select time and set the time as per your need. You can check by pressing read time to check if the time is updated or not.
6. After this, restart the machine. Once the app turns on, you will see that the date and time have been set.

7. Technical Specifications

Parameter	Value
Technology	Absorbance Photometry
Dimensions (L x B x H)	260x240x205 mm
Weight	5.6 Kg
Incubation Temperature	37.0°C ± 0.5°C
Warm-up Time	30 min
Number of Channels	16
Peak Power Consumption	60 W
Input Voltage / Current	12V / 10A
Milk Type	Cow / Buffalo / Mixed
Compatible Dye	Methylene Blue
Compatible Test Tube	OD: 15 mm, 15 ml with suitable rubber cork
Display	Touchscreen
Communication	USB & Wi-Fi

8. Key Features

- Rapid Microbial Quality Screening — allows a quick assessment of the microbiological quality of milk for routine quality control.
- Early MBRT Result Prediction — gives an early estimate of MBRT outcomes, which cuts the total testing time compared with the conventional method.
- Objective Photometric Analysis — relies on absorbance-based measurement to give consistent, reproducible results with no need for visual interpretation.
- Easy-to-Use and Reliable — built for simple operation and dependable performance in routine dairy testing conditions.

9. Maintenance & Care

Proper maintenance and care of the MBRT and the equipment used with it are essential for accurate results and a longer service life for the machine.

1. Keep the machine in a controlled, sterile environment that is free from dust, moisture, and excessive temperature fluctuations.
2. Sterilize test tubes, corks, and other equipment, such as measuring cylinders, both before and after every use.
3. Handle test tubes carefully so that they do not crack or break inside the machine, as this can cause sample spillage and contaminate internal components.

4. Inspect the channels and the incubation chamber regularly for residue or spillage and clean them promptly to prevent buildup.
5. Replace any damaged or worn-out equipment, including test tubes and corks, immediately so that test accuracy is not affected.

10. Safety Information

1. Make sure that all special notes and precautions given throughout this manual are strictly followed at all times.

2. Make sure the machine is properly earthed/grounded and connected to a stable power supply to avoid electrical hazards.

3. Do not operate the machine with wet hands or in a wet environment, to prevent the risk of electric shock.

4. Before any cleaning, maintenance, or servicing, switch off the machine and unplug it.

5. Keep the machine away from direct sunlight, heat sources, and flammable materials.

6. Do not try to open, repair, or modify the machine yourself; contact authorized service personnel for any technical issue.

7. If the machine makes any unusual sound or emits smoke, switch it off immediately and contact the concerned spokesperson/service provider.

8. Keep the machine out of the reach of unauthorized personnel and children.

11. Contact & Support