

Quick Manual

- RESPIROMETER (BRS-100/110) -

Do not throw away the packaging and please use it when you send the product to our company for the customer service

1_ BRS installation and operation flow chart

① Install the USB driver → ② Setup USB port → ③ Install the BRS program → ④ Connect the BRS device and program → ⑤ Check bubble counting → ⑥ Connect BRS bioreactors to the BRS cells → ⑦ Start measurement

2_ Caution

- Recommended operation at constant temperature
 - 7% change in gas volume for 20°C (68 °F) change
- Measurable temperature is 20~50°C (68~122°F)
 - It is necessary to input different temperature value in the BRS program when operating at other than 30°C ()
- The maximum measurable flow rate is 2 mL / min.
 - For the measurement of higher flowrate, high-flow cell should be used after purchase
- Before start experiment, generate a bubble by manually injecting air using ordinary sparging and check the bubble counting in the program
- Make a bubble artificially before measurement and start measurement
 - Using gases that do not affect the gas measurement
- During the operation, raw and cumulative data files being saved must be closed.
 - If Raw file and cumulative data file are opened, data will not be saved.
 - Do not use sleep mode in the computer (see manual page 18).

3_ How to install USB driver and BRS program

※ Download the related driver and BRS program from “Download” in the EET website

- USB driver installation

- ① Connect a USB cable between the device and the computer.
- ② Extract the supplied CP210.zip file.
- ③ Select [Start] - [Computer] - (right mouse button) - [Properties] and click [Device Manager]. Or [Start] - [Control Panel] - [Device Manager].
- ④ Check if the Silicon Labs CP210x CP2102 USB to UART Bridge Controller (“CP210x”) is created in the “Port (COM & LPT)”
- ⑤ CP210x- (right mouse button) - Click [Properties].
- ⑥ Driver - Click Update Driver.
- ⑦ Click Browse my computer for driver software.
- ⑧ Click Browse, select the unzipped folder, and proceed to install.

- USB port settings

- ① Make sure that the BRS-100 is turned on and the USB cable is connected.
- ② Click “Port (COM & LPT)” in [Device Manager] and click CP210x (COM1).
- ③ Set 'Bit 38400, Data bit 8, No parity, Stop bit 1, No flow control' in 'Port setting'.
- ④ Click the 'Advanced' button and check the COM port number.
- ⑤ Click OK button to close the setting window.

- Installing the BRS program

- ① Click “BRS setup.exe” to install.
- ② The default installation folder is C: \ EET \ BRS \.
- ③ Complete installation.
- ④ Be sure to turn off the computer’s power saving mode (see manual page 18).

- Device-BRS program connection

- ① Click CP210 (COM1) - [Properties] of [Device Manager] “Port (COM & LPT)”.
- ② Click 'Port Settings' - Advanced.
- ③ Check COM port number.
- ④ After executing the BRS program, click Menu - Settings - Options.
- ⑤ Check the port number of BRS port setting.
- ⑥ If the port and port number of [Device Manager] are different, match the port number of [Device Manager] with BRS port number.

- ⑦ Close the program after saving.
- ⑧ Restart the BRS program.

4_ Verify device operation

- ① After executing the BRS program, check whether the colors of channels 1 ~ 4 in the lower left corner are yellow or whether the measurement is waiting for measurement in menu measurement.
- ② Enter environment setting value (company provided) and operating temperature in menu setting.
- ③ Select the channel to start from menu measurement and click the start measurement button.
- ④ Artificially inject air to determine whether it works.

5_ Connecting the bioreactor to the BRS cells

- ① Remove the oil leakage prevention cap on the upper part of the BRS instrument measurement cell and connect the tubing.
- ② Be careful not to move the measuring cell when removing the cap.
- ③ Connect the tubing to the measuring cell [1] in the gas production experiment and connect the tubing to the measuring cell [2] in the gas consumption test (see manual, page 17).
- ④ After keeping the temperature of the sample at the desired operating temperature, inject about 2 mL of gas into the bioreactor to check if the bubble is rising in the measuring cell, and then start the measurement.

6_ BRS operation video

※ A video of how to operate a BRS device can be found on YouTube (<http://www.youtube.com>) and on the company's website (<http://www.eetech.co.kr>).

○ Youtube

- ① Search “Eco Environment Technology, Inc.”
- ② Click the channel of EET and watch the operation movie(Uploader : Eco Environment Technology, Inc.)

○ EET website

- ① Open the menu “BRS Operation” .
- ② Watch the operation movie.