

Application Note 231 NIBP100B Noninvasive Blood Pressure System Calibration

The **NIBP100B** is a noninvasive blood pressure monitor that uses a pressure sensor placed on the wrist over the radial artery. This device uses a "sweep technique" which applies a varying force on the radial artery. The counter-pressure in the artery produces a signal which is digitized and used to calculate blood pressure parameters.

With just a few easy calibration steps, the **NIBP100B** and the MP System work together to provide automated noninvasive blood pressure measurements.



Equipment

- **NIBP100B** Noninvasive Blood Pressure Amplifier
 - **CB61** Modular Line Phone Cable (included)
- BIOPAC Data Acquisition Unit
 - -E education systems: **MP36** or **MP35** unit
 - -R research systems: **MP36R** or **MP150** unit *and*
DA 100C General Purpose Transducer Amplifier
- Modular Phone Jack Transducer Connector Interface
 - -E: **BSL-TCI5**
 - -R: **TCI105**

Hardware Setup

1. NIBP100B

- a) Turn the **NIBP100B** ON.
- b) Set the rotary function selector to BP.
- c) Zero the sensor as the procedure indicates on the LCD screen of the **NIBP100B** unit.
- d) Connect the wrist sensor to the front of the **NIBP100B**.

2. BIOPAC Data Acquisition System (connected to your computer)

MP36R/MP36/MP35

- a) Turn the MP3X unit ON and wait for the Busy light to stop flashing.

MP150



- a) Connect the DA100C to the UIM100C module of the MP150 or MP100 System
- b) Set DA100C options: Gain to 1000
 10HzLP filter to ON
 300Hz LP filter to ON
 HP filter to DC
 Channel slider (note the CH number for use in Software Setup)


3. Interface

- a) Connect the interface to the MP System
 - **BSL-TCI5**: Plug the BSL-TCI5 into the any open input port on the MP3X.
 - **TCI105**: Plug the TCI105 into the DA100C.
- b) Plug the CB61 modular line phone cable into the V-Line output of the **NIBP100B** and into the interface (BSLTCI5 or TCI105).

Software Setup

1. On the NIBP100B, turn the function selector to Communications; this should display the **Communications: V-Line** screen.
2. Launch the BIOPAC software.
3. Open the BIOPAC channel scaling dialog.
 - a) Select MP menu > Set Up Channels
 - b) Enable the channel that the NIBP100B is connected to (match the DA100C CH slider #).
 - c) Open the Scaling dialog.

BSL PRO: Click the  Parameters button in the Input Channels dialog. Choose "Blood Pressure (Arterial)"
Click the  View/Change Parameters icon.

AcqKnowledge: Click the  button in the Input Channels dialog.
4. Set the lower calibration parameters.
 - a) Press the soft key on the NIBP100B unit for the lower calibration value (i.e., 50 mmHg).
 - b) Click Cal1 in the BIOPAC scaling dialog to take a voltage value from the NIBP100B at the lower calibration value; it is not a problem if the number is negative.
 - c) Type the lower BP value (as selected in step 4a) into the Scale value entry box.
5. Set the upper calibration parameters.
 - a) Press the soft key on the NIBP100B unit for the upper calibration value (i.e., 150 mmHg).
 - b) Click Cal2 in the BIOPAC scaling dialog to take a voltage value from the NIBP100B.
 - c) Type the upper BP value (as selected in step 5a) into the Scale value entry box.
6. Set the units: Type "mmHg" in the Units entry box.
7. Click OK and close the scaling dialog.
8. Click MP menu > Set Up Acquisition:
 - a) Set Acquisition Sample Rate to 500 samples/second.
 - b) Set Total Length of recording time to suit your experiment.
 - c) Close the acquisition dialog.



Recording

1. Place the blood pressure sensor on the subject's wrist.

NOTE The sensor should be at heart level; if the study requires that the arm is placed elsewhere, adjust the sensor height on the **NIBP100B** unit to compensate for the difference by doing the following:

- a) Press "Setup Screen Key" twice.
 - b) Screen should read SENSOR HEIGHT.
 - c) Press the Sensor Height Option button on the **NIBP100B** to ON.
 - d) Adjust sensor height by pressing the touchpad:
 - e) SENSOR ↑ to raise sensor height.
 - f) SENSOR ↓ to lower sensor height.
2. Press the NIBP100B play button.
 3. Click Start in the BIOPAC software.

