APPLICATION NOTES

Application Note 224:   Noninvasive Blood Pressure Calibration

Equipment

- [NIBP100A](#) Noninvasive Blood Pressure System
- [MP100/150](#) Data Acquisition System
- Interface – *choose one*
    - [DA100C](#) General Purpose Transducer Amplifier with [TCI105](#) Interface for Modular Phone Jack

  OR

    - [HLT100C](#) or AMI100D High-level Transducer Interface
    with [INISO](#) or INISOA isolated input adapter
    and [CBL105](#) 3.5 mm to 6.33 mm (1/4") phone plug

This application note provides instructions on how to calibrate the NIBP100A with Acq*Knowledge* software.

The **NIBP100A** 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 NIBP100A and an MP System with Acq*Knowledge* work together to provide automated, continuous, noninvasive blood pressure measurements.

NOTE   In normal conditions, the sensor should be at heart level; if the study requires that the arm is placed elsewhere, adjust the sensor height on the NIBP100A to compensate for the difference by doing the following:

A. Press "setup" button on NIBP100A twice.

   - Screen should read SENSOR HEIGHT.

B. Press button on NIBP100A corresponding to ON.

C. Adjust the sensor height by pressing the touchpad below the SENSOR.

   - SENSOR ⬇ to raise sensor height.
   - SENSOR ⬆ to lower sensor height.
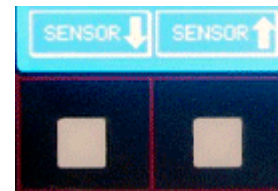
Setup and Calibration

   - If using DA100C, see page 2.
   - If using HLT100C or AMI100D, see page 3.

USING DA100C

Hardware Setup

1. Connect the DA100C to the UIM100 module of the MP1XX.
2. Connect the TCI105 to the front of the DA100C.
3. Connect the NIA V-Line Interface to the TCI105 via phone jack.
4. Connect the parallel cable from the NIA V-Line Interface to the back of the NIBP100A at the "Data Port" location.
5. Set the Gain setting on the DA100C to 1000.
6. Connect the sensor to the back of the NIBP100A at the port marked "Patient Cable" and hang sensor properly on cradle.
7. Turn the NIBP100A on via the switch on the back of unit.
8. Press Test when prompted.
   - This sensor test occurs each time the unit is powered on.

Software Setup for the MP1XX

1. Under the **MP1XX** menu select **Setup Channels** and enable one analog channel; make sure to correlate this with the channel you selected on the top of the DA100 module.
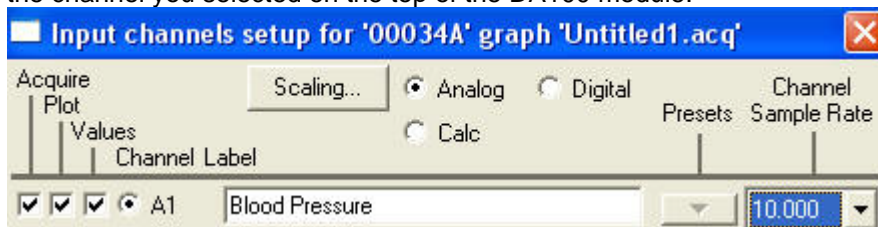
2. Click the **Scaling...** button to generate the Change Scaling parameters dialog:
3. On the NIBP100A, push the "setup" button twice. The screen should be title SENSOR HEIGHT:
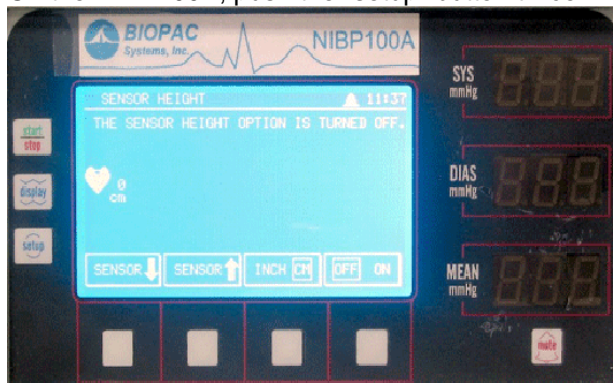
4. In the Scaling dialog, **click Cal 1** and enter a **Cal 1 Scale Value** of 50.
5. On the NIBP100A, push the "setup" button twice. The screen should be titled SET CLOCK:
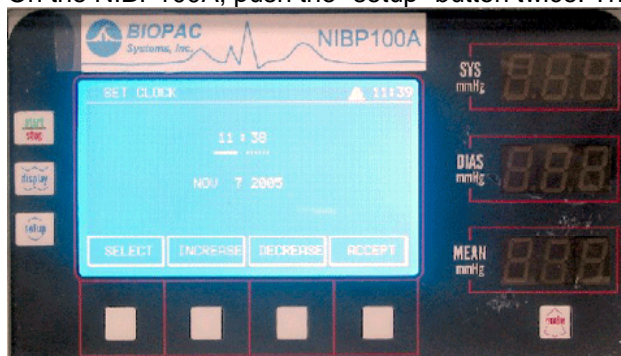

6. In the Scaling dialog, **click Cal 2** and enter a **Cal 2 Scale Value** of 150.
7. In the Scaling dialog, enter "mmHg" for the Units label.
8. Click OK to close the Change Scaling Parameters dialog.
9. Close the Channel Setup dialog.
10. Place sensor on wrist according to instructions on top of NIBP100A system.

USING HLT100C or AMI100D

Hardware Setup

1. Connect the HLT100C/AMI100D to the UIM100 module of the MP1XX unit
2. Connect the INISOA to the HLT100C/AMI100D
3. Connect the CBL105 between the Analog I/O on the rear of the NIBP100A unit and the INISO
4. Connect the sensor to the back of the NIBP100A at the port marked "Patient Cable" and hang sensor properly on cradle.
5. Turn the NIBP100A on via the switch on the back of the unit.
6. Press Test when prompted.
   o This sensor test occurs each time the unit is powered on.

Software Setup

1. Under the **MP** menu select **Setup Channels** and enable one analog channel, make sure to correlate this with the channel you connected to on the HLT100C/AMI100D module.
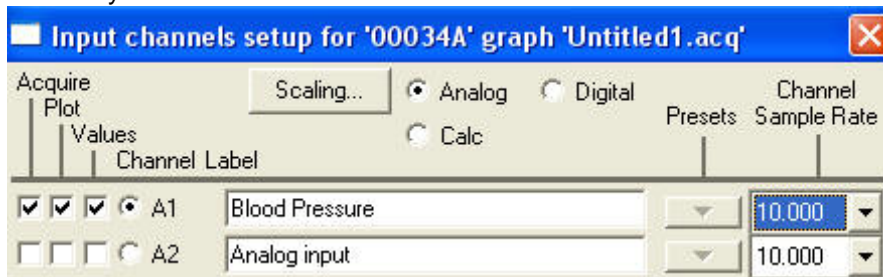
2. Click the **Scaling...** button to generate the Change Scaling Parameters dialog.
   a. Enter 0 for **Cal1 Input volts**.
   b. Enter 0 for **Cal1 Scale value**.
   c. Enter 1 for **Cal2 Input volts**.
   d. Enter 100 for **Cal2 Scale value**.
   e. Enter mmHg for **Units**.
3. Click OK to close the Change Scaling Parameters dialog.
4. Close the Channel Setup dialog.
5. Place sensor on wrist according to instructions on top of NIBP100A system.