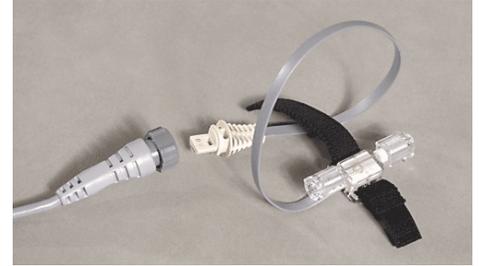


### SS13L PRESSURE TRANSDUCER

The SS13L pressure transducer is used to measure direct arterial or venous blood pressure in animals or to record pressure changes within a closed system such as an organ or tissue bath system. Connect to the tubing via the standard rotating Luer-lok fittings. This assembly consists of a disposable transducer with a 30 cm cable that attaches to a reusable 3-meter cable that is designed to interface with the MP3X. The transducer is supplied non-sterile but can be cold sterilized.



**Note: The SS13L Pressure transducer is not intended for use with humans.**

Typical software settings for the blood pressure transducer are described in the table below:

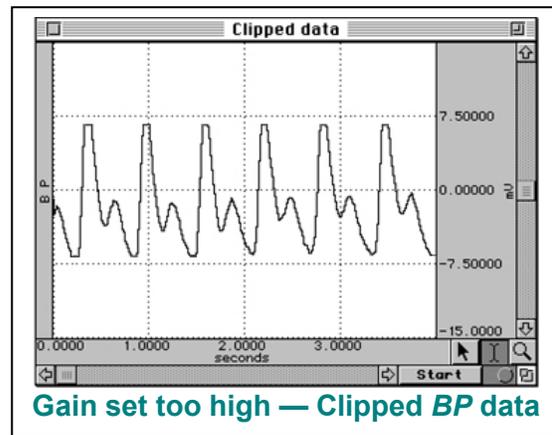
Filter 1	Filter 2	Filter 3	Hardware filter	Gain	Coupling
Low pass 66.5 Hz Q = 0.5	Low pass 38.5 Hz Q = 1.0	Band Stop 60 Hz Q = 1.0	1 KHz	1000 (preset)	DC

These settings are automatically applied when the **Pressure** preset is selected, but settings can be adjusted if necessary.

### PRESSURE TRANSDUCER CALIBRATION

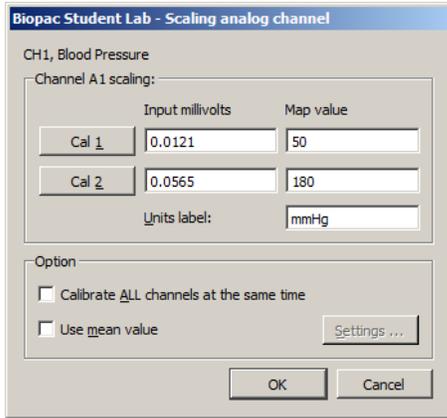
Calibrating a blood pressure transducer is a two step process. The first step involves finding the optimal gain setting for the transducer and the second step is the actual calibration.

- 1) To find the optimal gain setting:
  - a) Start with the software Presets (in this case, a gain of 1000)
    - To set the Presets: **MP3X menu > Set Up Data Acquisition > Channels > Analog Presets > select “Blood Pressure (Arterial)”**
  - b) Bring the transducer to the approximate maximum and minimum expected pressures.
  - c) Collect data for a few seconds at these settings.
  - d) Inspect the sample data; look for data that is “railed” or “clipped.” This occurs when the input signal (times the gain setting) is too large relative to the maximum input range. An example of clipped data is shown at right.
  - e) If the signal is clipped, decrease the gain setting by one step (e.g., from x5000 to x2000) and collect new data at the lower gain setting.
    - To access the Gain setting: **MP3X menu > SetUp Data Acquisition > Channels > Blood Pressure (Arterial) preset channel > Setup button > Gain pull-down menu**
  - f) Repeat this procedure until the signal no longer appears “clipped.”



Once an optimal gain setting for the transducer has been established, this same gain setting can be used for other similar transducers and similar measurements.

- 2) The next step is to actually calibrate the transducer, which means mapping the input signal to more meaningful units (such as mmHg). To do this:
  - a) Access the Channel scaling dialog box (**MP3X menu > Set Up Data Acquisition > Channels > Blood Pressure (Arterial) Preset channel > Setup button > Scaling button**).



**Note:**

In this sample dialog, the transducer was brought to a pressure of 50 mmHg and the Cal 1 button was pressed.

The transducer was then brought to a pressure of 180 mmHg, and Cal 2 was pressed.

- b) Bring the transducer to the lowest expected pressure.
- c) Click on the **Cal 1** button in the Channel scaling window.
  - A voltage value will be automatically entered in the corresponding **Input value** box.
- d) Bring the transducer to the highest expected pressure.
- e) Click on the **Cal 2** button in the same scaling window.
  - A voltage value will be automatically entered in the corresponding **Input value** box.

The software will now interpolate between these two calibration points to give accurate measurements in mmHg.

**SS13L PRESSURE TRANSDUCER SPECIFICATIONS**

Operational pressure:	-50 mmHg to +300 mmHg
Overpressure:	-500 mmHg to + 4000 mmHg
Sensitivity:	25 uV/mmHg (at 5 VDC excitation)
Accuracy:	± 1.5% of reading or ± 1.0 mmHg (whichever is greater)
Operating temperature:	10° C to 40° C
Storage temperature:	-30° C to +60° C
Volume displacement:	0.04 mm per 100 mmHg
Leakage current:	10 uA RMS @ 115 VAC 50 Hz
Dynamic response:	100 Hz
Unbalance:	50 mmHg max
Connection Ports:	male Luer and female Luer (sensors shipped prior to summer 2010 were male Luer on both sides)
Eight-hour drift:	1 mmHg after 5-minute warm-up
Isolation:	<= 5 uA leakage at 120 VAC/60 Hz
Defibrillation:	Withstands 5 charges of 400 joules in 5 minutes across a load
Combined effects of sensitivity, linearity and hysteresis:	1 mmHg (nominal)
Transducer cable:	30 cm
Interface cable:	3 meters
Transducer dimensions:	67 mm long X 25 mm wide
Weight:	11.5 grams

**RX104A REPLACEMENT ELEMENT**

RX104A is the replacement pressure-sensing element for blood pressure transducer SS13L. It does not include the Smart Sensor connector and cable.

