Title: XOS1_v4.1 Bed Assembly Instructions		
Revision: 001	**Creation Date**: 27 September 2023	
Author: Max Tree		**Reviewer**: Jake Merrell
Purpose: Provide prototype assembly instructions and general prototype information for Stryker.		

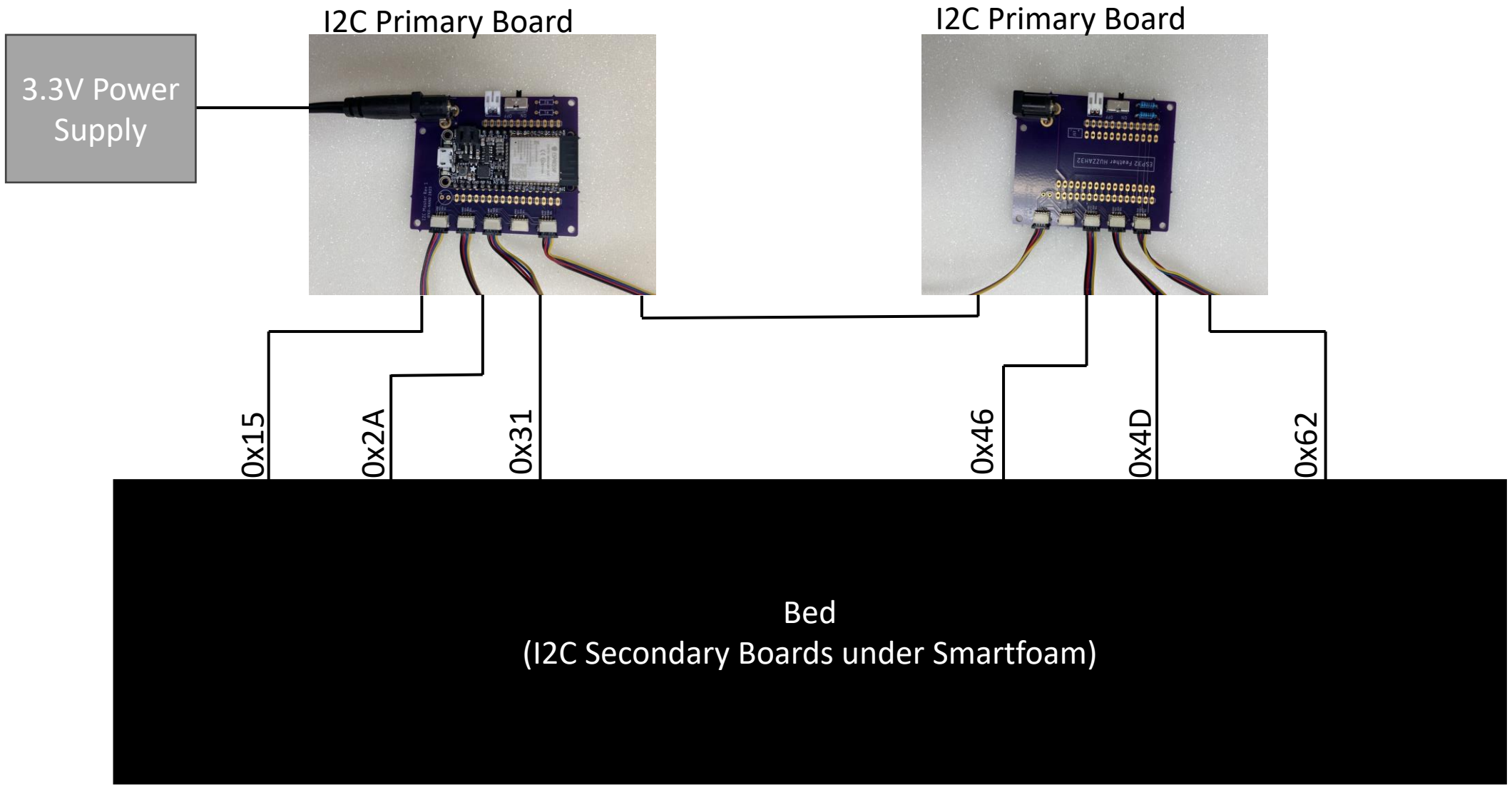
Revision History

Revision:	**Revised By**:	**Checked By**:	**Date**:	**Description**:
001				Initial Release

Prototype Capabilities

- Pressure Measurement Range: 0-2 PSI
- Prototype calibrated to the average sensor performance and is calibrated for positive strain rate conditions.
- System Sampling rate: ~ 3Hz
- Sensing area: 32”x72”
- Sensor size: $1\frac{3}{16}$”x $1\frac{3}{16}$”

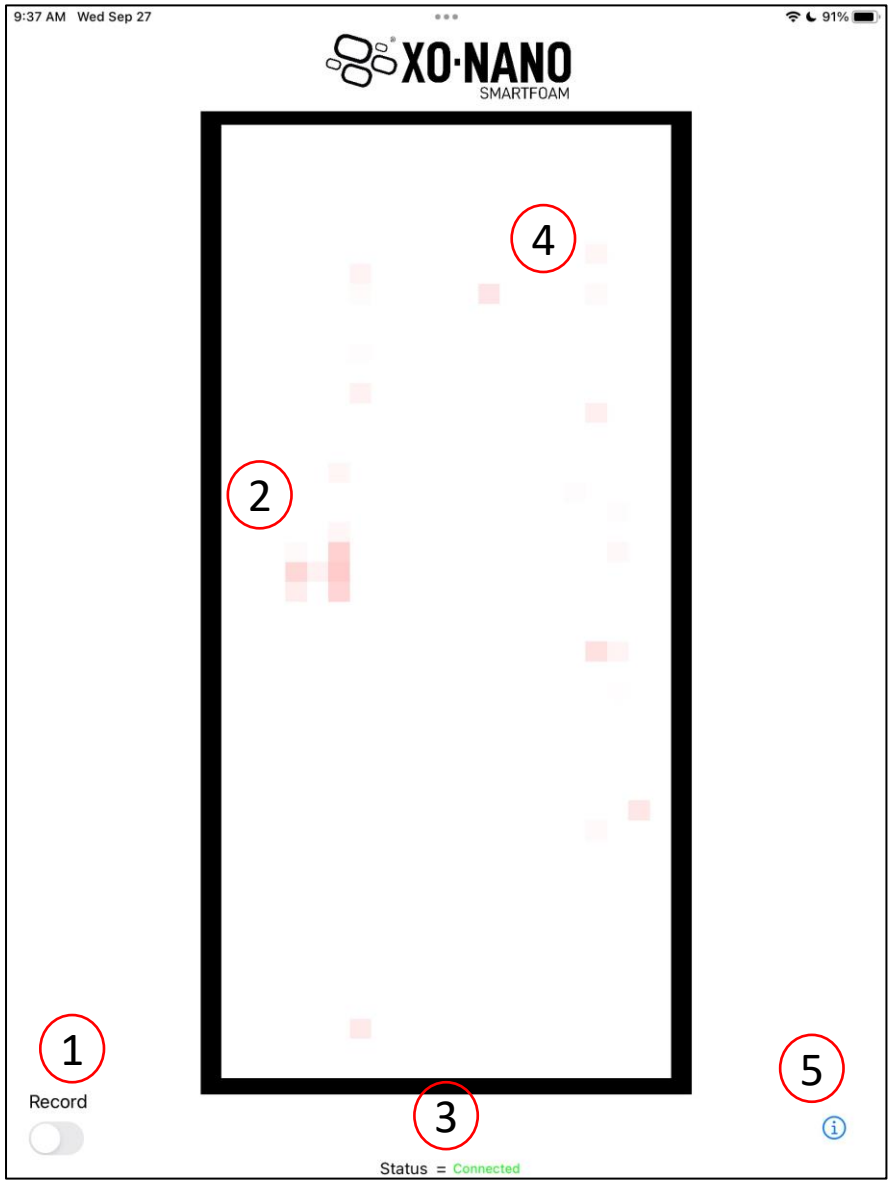
Assembly Schematic



Stryker Bed App Functions

The screen shot on the right shows the Stryker Bed app by XO-NANO Smartfoam. Below is a list of features that corresponds to the numeric indicators in the image.

1. Record Switch. While the switch is in the ON position, the app will record data to a .csv file in the Files app on the ios device running the Stryker Bed app.
2. Example of applying a 2lb mass over 16in^2.
3. I2C primary board BLE connection status.
4. Example of typical noise while at 0psi.
5. Information button. Click this button for more information on the app.



I2C Secondary Board replacement

If an I2C secondary board (left image) is damaged, this is the process of replacing an I2C secondary board:

- Identify the hex number on the back of the damaged PCB and report the number to XO-NANO and indicate a shipping address for the new board. The damaged PCB can be found by connecting the I2C primary board via USB to a computer and reading a serial monitor's output.
- XO-NANO will program a new board with the hex number provided and ship it the customer specified location.
- XO-NANO will send new TPU clips to attach the new board.
- Once the new board has arrived, cut the TPU clips attaching the damaged board to the foam and remove the clips completely from the prototype. Also, disconnect the I2C cables from the damaged board.
- Place new PCB in its location and insert new TPU clips.
- Connect I2C cables to the new PCB.
- Questions/concerns can be sent to XO-NANO at any point in the process.

Troubleshooting

Issue	Cause
App reporting output slowly (<1Hz)	Could be one or many of the following: • Loose I2C wire • Damaged I2C secondary board • Microcontrollers not receiving enough power
Sensor not reporting normal values	Could be one or many of the following: • Sensor electrodes damaged (look for sharp creases in the electrodes where the electrodes may have broken) • I2C secondary board damaged.

Next Generation Modifications

- Smartfoam sheets will be wide enough to cover the entire mattress.
- Smartfoam manufacturing adjustments to improve Smartfoam accuracy.
- Electrical components with lower tolerance will reduce sensor-to-sensor measurement variation.
- PCB durability design improvements.

Operational Notes

- On the I2C Primary board, the ON/OFF switch is only for the battery terminal (not used in this prototype) and should be unplugged after use.
- If I2C communication seems to be failing, try adding an additional 3.3V power supply to the second I2C Primary board (the one without a microcontroller installed).