Title: XO-Mattress v2 Assembly Instructions		
Revision: 001	**Creation Date:** 17 September 2024	
Author: Max Tree		**Reviewer:** Jake Sundet
Purpose: Provide instructions required for system set up and use.		

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

Introduction

The XO-Mattress v2 is the second pressure sensing matt designed by XO-NANO Smartfoam for Stryker. This second sensing matt is more durable and accurate than the first iteration. This document goes over the materials required to assemble and use the mattress. Then important notes are presented, and finally the instructions for assembly and use are recorded.

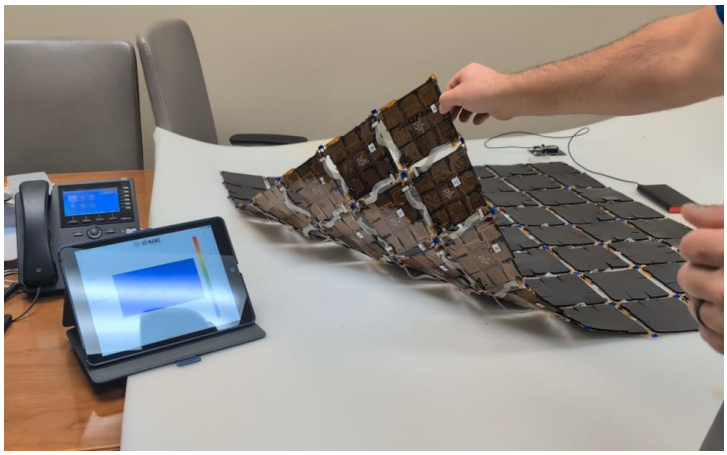

Figure 1 Fully assembled XO-Mattress v2.

Materials List

- I2C Primary MCU Adapter (purple PCB)
- ESP32 (preinstalled on the I2C Primary MCU Adapter)
- Liquid Wire I2C Cable
- USB-A to USB-micro B cable
- Power Source (laptop, computer, or a portable charger power bank)
- iOS device

Notes

1. No Durability testing was performed on the XOS2_v2 FPCBs (**Error! Reference source not found.**)
2. Glue holding the Liquid Wire cables and redundant I2C paths increase overall durability; but since mattress durability testing was not performed, care should be taken when moving or using the XO-Mattress v2 for the prototype to last a long time.
3. The power supply must be provided by a laptop, computer, or a portable charger power bank and plugged into the micro-USB port on the ESP 32. When using a wall charger, the noise from the environment is not accounted for by circuit GND and the noise becomes too large for sensor use.
4. The Liquid Wire cable might still have its plastic sheath attached. The sheath must be peeled off for the cable to be able to stretch properly.
5. The StrykerBed application will update the "Status" label to Connected when the Primary microcontroller connects to the app.

Instructions

Assembly Instructions

1. Lay out the mattress onto air bladder system or a foam mattress.
2. Connect the I2C Primary MCU Adapter PCB to an 8" Liquid Wire (LW) cable. See Figure , and **note** that the cable and PCB have white trace labels that need to line up. This is also true for the XOS2_v2 to LW cable connection.

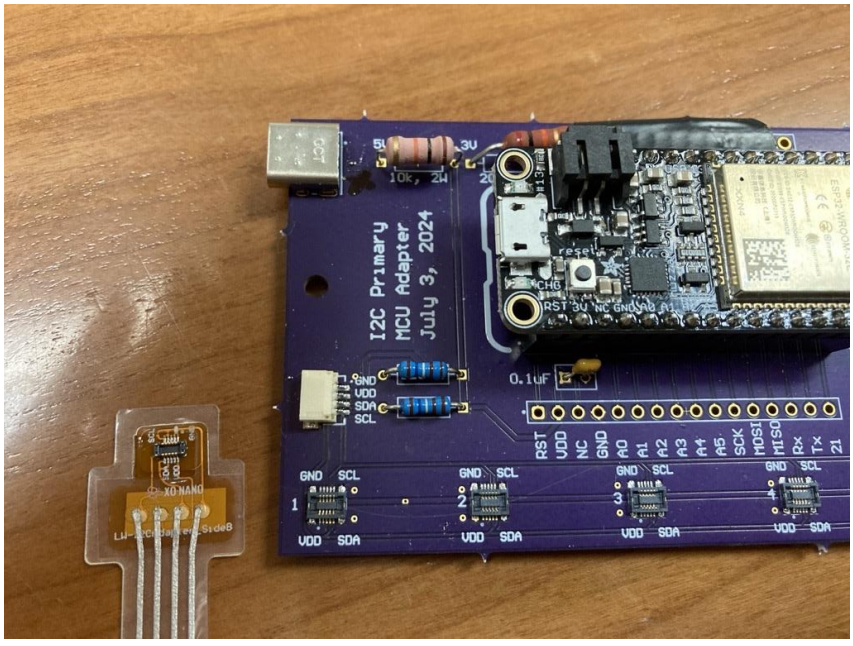

Figure 2 Close up image of the I2C Primary MCU Adapter and a Liquid Wire cable end.

3. Connect the 8” LW cable to any available XOS2_v2 FPCB. Make sure the white trace labels line up.
4. Connect the micro-USB port on the ESP32 to desired power supply (laptop, computer, or a portable charger power bank).
5. Download TestFlight onto an iOS device via this link: https://testflight.apple.com/join/IpvgCWbH.
6. Click the same link in step 5 a second time to download the XO-NANO application, StrykerBed. The link can also update the StrykerBed application.

Use Instructions

1. Remove anything that is resting on the smartfoam. When the application is first started, the entire mattress is zeroed, and therefore no pressure should be exerted on the foam upon application startup. Open the StrykerBed app.
2. If the application opens, but says disconnected, then ESP32 is not being powered properly. Once everything is powered properly, the virtual bed will appear solid blue.
3. Before testing the bed, wait at least 5 seconds to allow for steady state signal and then press the "Calibrate" button in the app to adjust the sensor calibration for the current environment.
4. Begin using the XO-Mattress v2 sensors as desired.
    - Use the "Capture" button to take a screenshot. This should save the array of pressure data to the generic iOS photos application.
    - Use the "Record" toggle switch to start and stop recording data (psi). The data will be stored in the iOS device's Files app. This can be found by swiping down at the top of the screen while on the iOS device's home page and typing "Files" into the search bar.
5. If questions or concerns arise, please contact one of XO-NANO's engineers,
    a. Maxwell Tree - maxwell.tree@xonano.com or 925-961-4097
    b. Jake Sundet – jake.sundet@xonano.com