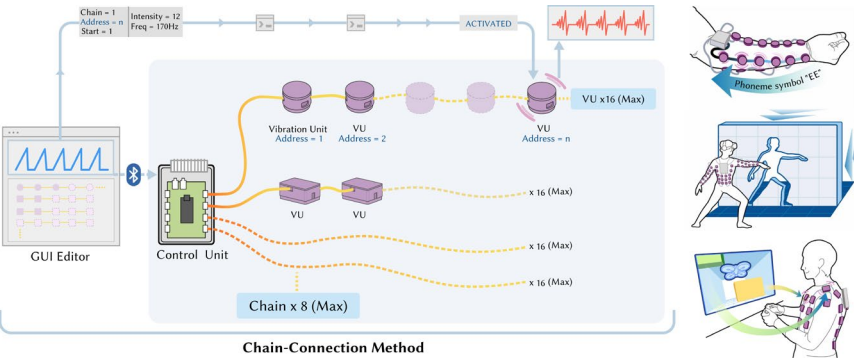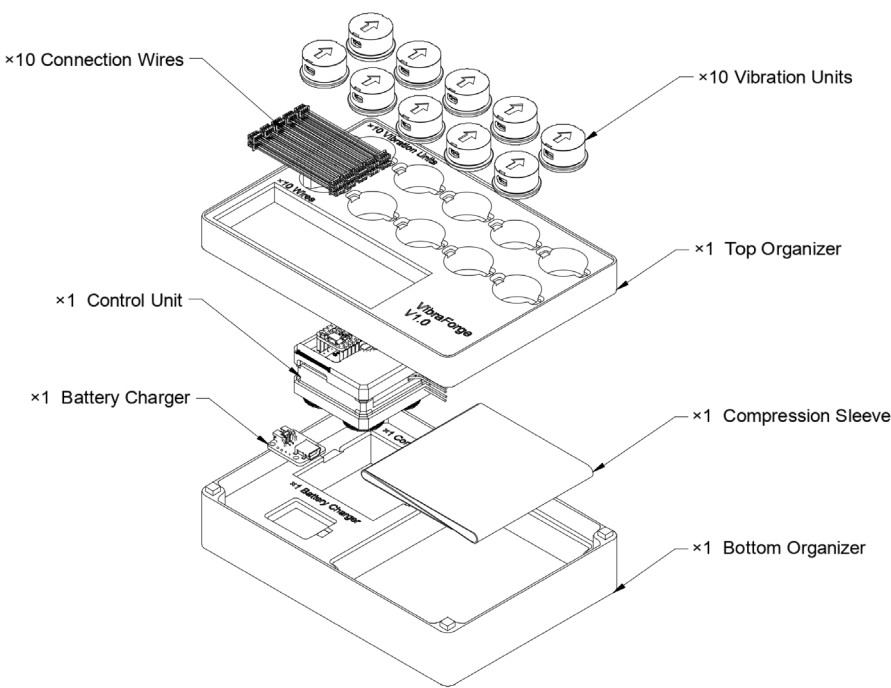# VibraForge Dev Kit v1

A Scalable Prototyping Toolkit For Creating Spatialized Vibrotactile Feedback Systems

Designed and Assembled by Qilong (Jerry) Cheng, April 2025
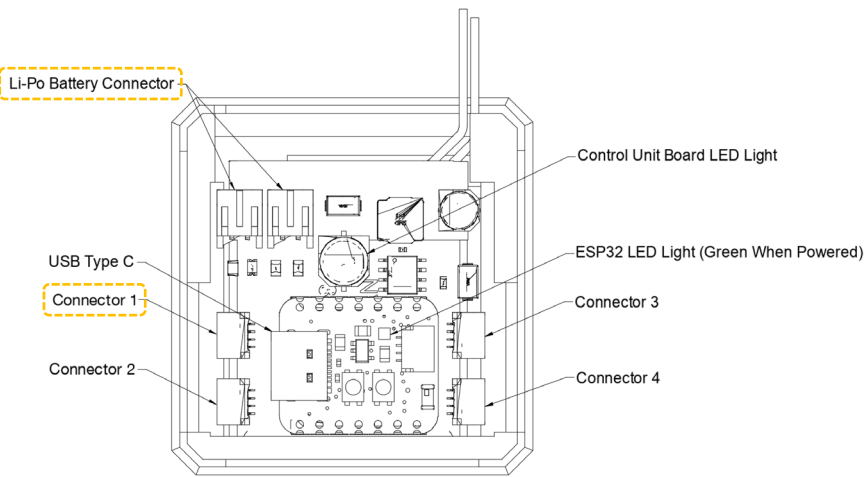
What's Inside?

- ×10 Connection Wires
- ×10 Vibration Units
- ×1 Top Organizer
- ×1 Control Unit
- ×1 Compression Sleeve
- ×1 Battery Charger
- ×1 Bottom Organizer

We're excited to help you begin your journey into the world of haptics!

Quick Start Guide:

Connect the Li-Po battery to the Li-Po Battery Connector located at the top. A green LED will light up to indicate a successful connection.

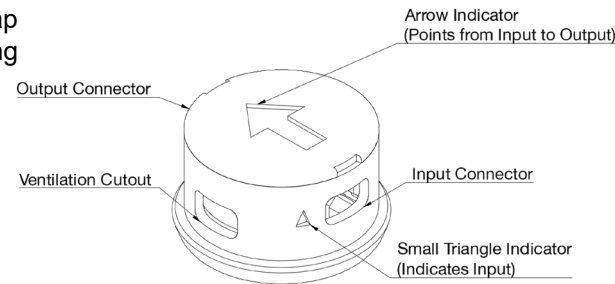The diagram below shows four connectors for each vibration unit chain. We recommend starting with Connector 1 for optimal configuration.

- Li-Po Battery Connector
- USB Type C
- Connector 1
- Connector 2
- Control Unit Board LED Light
- ESP32 LED Light (Green When Powered)
- Connector 3
- Connector 4

Step 2   **Vibration Units**

The arrow → on the cap indicates the connecting direction from input to output.

Do not reverse the direction, or the unit driver board might be damaged due to short circuit.

Output Connector

Ventilation Cutout

Arrow Indicator
(Points from Input to Output)

Input Connector

Small Triangle Indicator
(Indicates Input)

Step 3   **Connect Them Together**

Each chain supports up to 16 units. The unit address on each chain starts from 0.

For example, the units on the first chain have address 0,1,2,...,15.

Control Unit

Vibration Unit
(Address = 0)

Vibration Unit
(Address = 1)

Vibration Unit
(Address = 15)

Connector 1 (Address 0 to 15)
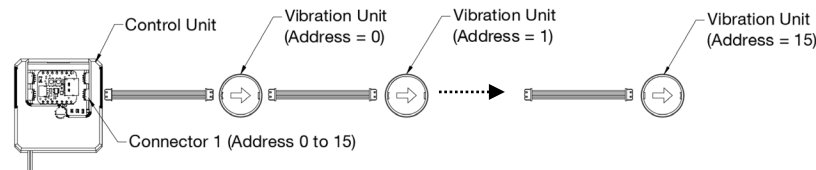
Step 4   **Attach Vibration Units to the Sleeve**

Slide the vibration unit onto the compression sleeve and place the press-fit ring under.

Press the components together until they securely lock onto the sleeve.

Vibration Units

Compression Sleeve

Press-fit Ring
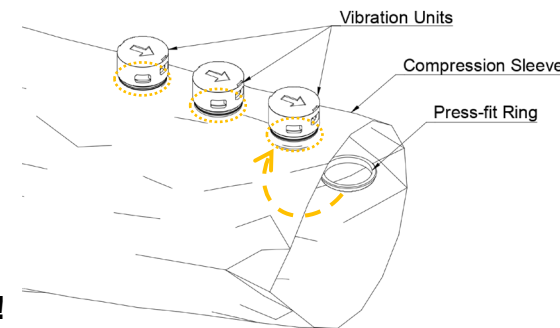
Step 5   **Have Fun!**

Once the hardware is setup, you can play vibrations using software from the GitHub Repo https://github.com/huangbj16/VibraForge

An easy place to start is to run
Software_Design/Python_Server/Python_Test.py
  - *pip install bleak*
  - *python Python_Test.py*
If you prefer using GUI, try GUI_Editor/main app/app.py
  - *pip install PyQt6 numpy matplotlib scipy bleak*
  - *python app.py*

Useful Links:

A full walkthrough video for the assembly:
https://www.youtube.com/watch?v=Ji4QbBA8m8U

Open-source GitHub repository:
https://github.com/huangbj16/VibraForge

If you have any other questions for the toolkit or potential collaborations, feel free to email me!

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