

Sinking Clock — Electronics Assembly Guide

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Mk. 0.1

Purpose

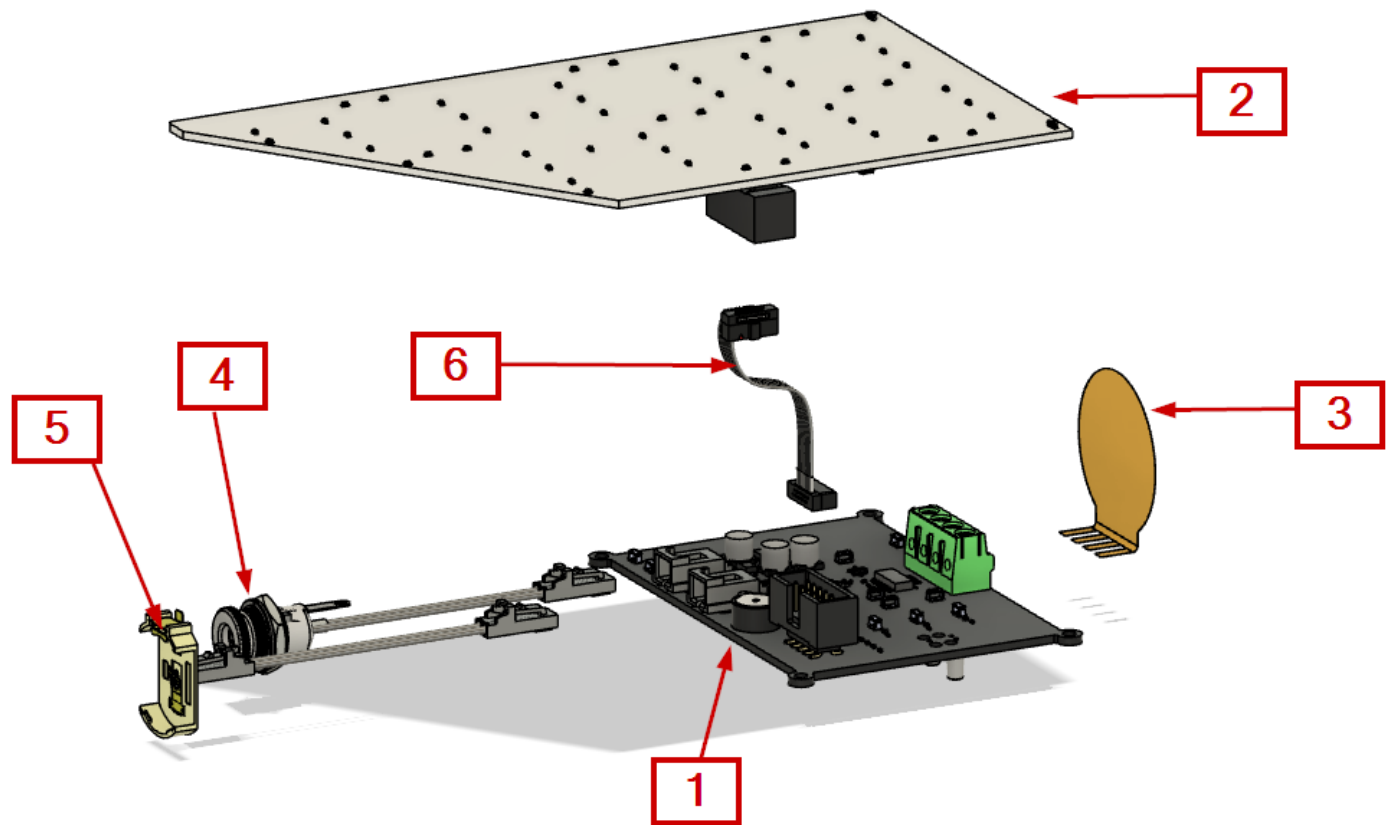
This electronics assembly guide details descriptions, recommendations, and precautions for handling and assembling the electronic components of Sinking Clock.

This Electronics Assembly Guide pertains to the following revisions of the PCBAs in Sinking Clock:

- Sinking Clock: Brain PCB – **Mk. IV**
- Sinking Clock: LED PCB – **Mk. VI**
- Sinking Clock: Flex PCB – **Mk. III**

The author of this document assumes no responsibility or liability for any errors, omissions, or outcomes resulting from assembling the electronic components of Sinking Clock. Reader(s) are solely responsible for verifying the accuracy, applicability, and suitability of the information for their intended use. By using this document, the reader agrees to assume full responsibility for any risks associated with the application of the provided information.

Full Electronics Assembly – Exploded View



Full Electronics Assembly – Bill of Materials

Drawing Item Number	Item Description	Item Manufacturer	Manufacturer Part Number	QTY
1	Sinking Clock - Brain PCB, Mk. IV	PCBWay	W665653AS1N49, T-1N50W665653A	1
2	Sinking Clock - LED PCB, Mk. VI	PCBWay	W665653AS1N47, T-1N48W665653A	1
3	Sinking Clock - Flex PCB, Mk. III	PCBWay	W665653AS1N46	1
4	Barrel Jack Connector Cable Assembly	-	-	1
5	Coin Cell Battery Cable Assembly	-	-	1
6	Brain PCB to LED PCB IDC Cable	Assmann WSW Components	H3DDH-1006G	1

Barrel Jack Connector Cable Sub-Assembly – Bill of Materials

4a	CL Positive Lock Socket to Individual Wire Leads, 2 pos, 150mm	Molex	2162711022	1
4b	Power Barrel Jack, 2.5mm ID x 5.5mm OD, Chassis Mount	Memory Protection Devices	EJ501B	1

Coin Cell Battery Cable Sub-Assembly – Bill of Materials

Subassembly Component	Item Description	Item Manufacturer	Manufacturer Part Number	QTY
5a	CL Positive Lock Socket to Individual Wire Leads, 2 pos, 150mm	Molex	2162711022	1
5b	Coin Cell Battery Connector	-	-	1

Recommended Assembly Steps

1. Pre-Enclosure PCB test

Be sure to connect and test all electronic components before assembling them inside of the clock. This includes:

- All **LEDs** on the LED PCB, including the AM/PM and alarm enable LEDs
- All **buttons** on the Brain PCB
- **Software functions** like time setting, alarm setting, and alarm sound
- All **cables** to ensure connectors don't have defects

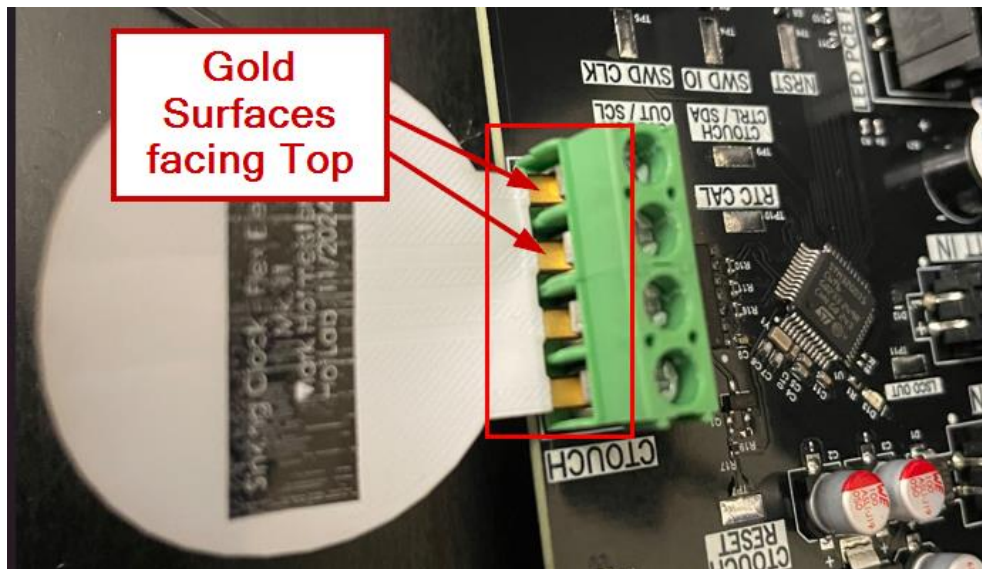
Caution: Never hot-plug anything. That is to say – Connect power to the system **last**. Never plug/unplug any cables if the Brain PCB is powered.

Caution: When handling PCBs, try to touch the on-board components as little as possible, as this could transfer electrostatic discharge (ESD) into the components. The boards are designed to be able to handle ESD exposure, but extra caution can't hurt.

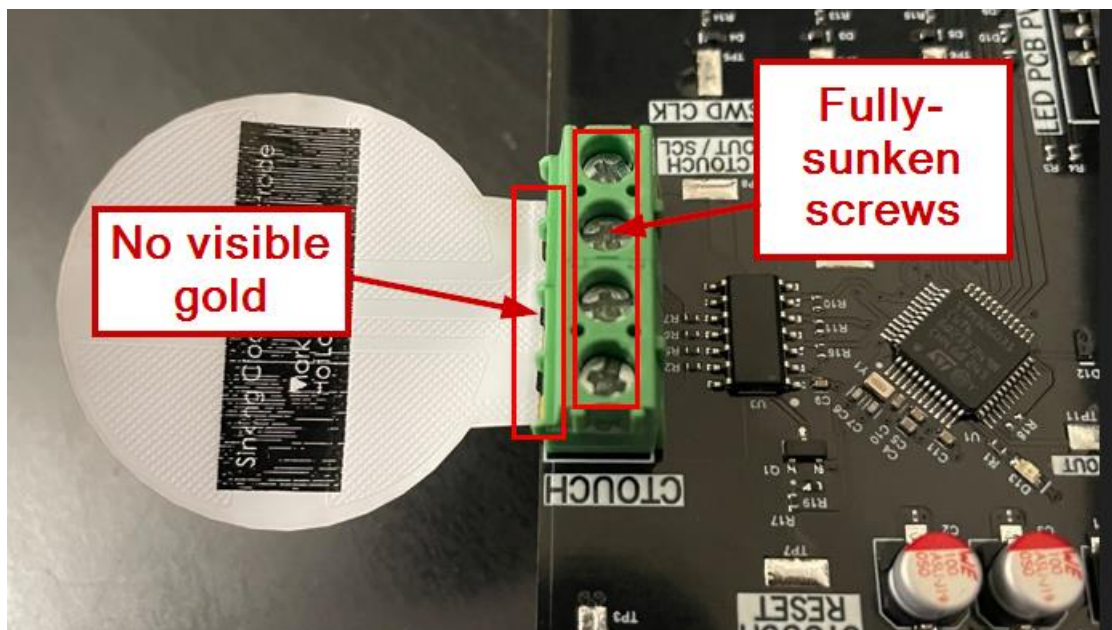
2. Mounting LED PCB to Enclosure

Slide the LED PCB into place. **Caution: this step can shear off LEDs. Complete this step very carefully.**

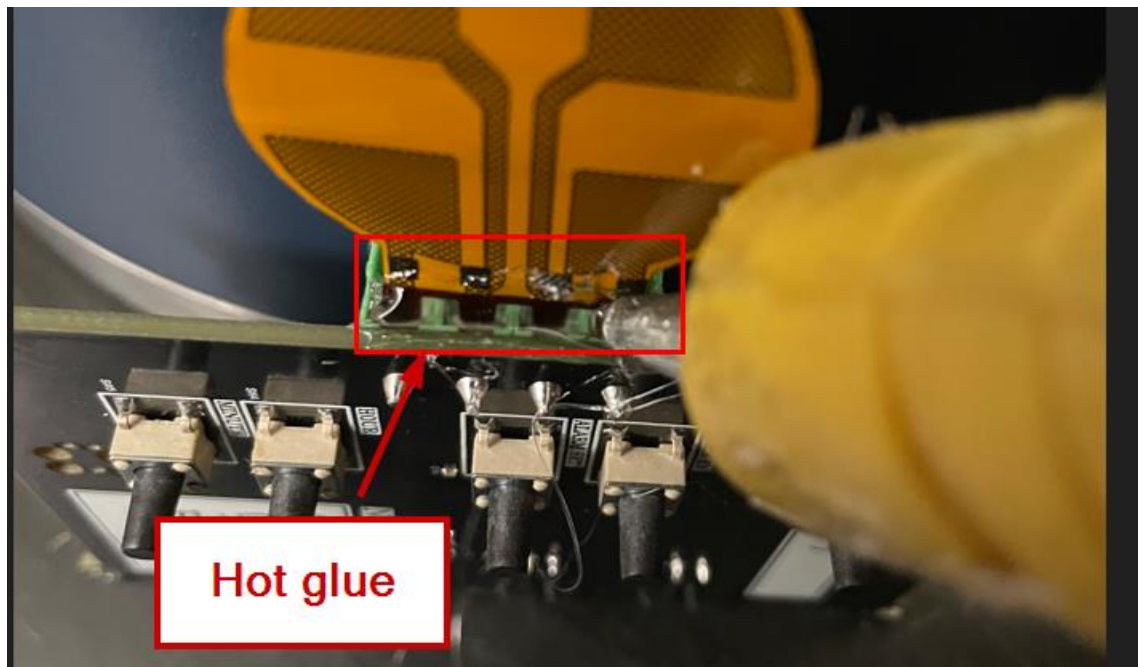
Damage to LED joints can cause segments to fail entirely. However, a sinister and more frustrating effect is **intermittent failures**, in which a sheared-off LED sometimes connects and sometimes doesn't resulting in a segment that only sometimes lights up. To ensure no intermittent failures, test assembled Sinking Clock LED PCBs extensively.



Tighten screws until sunken and firm. A light tug on the touch electrode should yield no movement. When viewed from above, the exposed gold contacts **should not be visible**.

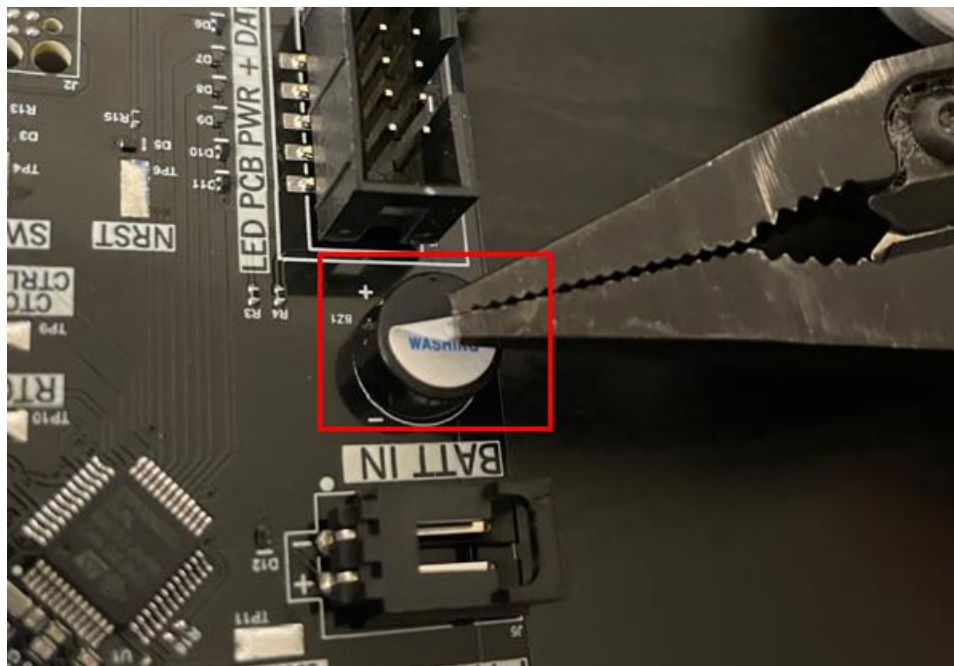


Optional - To add extra mechanical resilience, use some hot glue to adhere the underside flex PCB to the screw terminal.



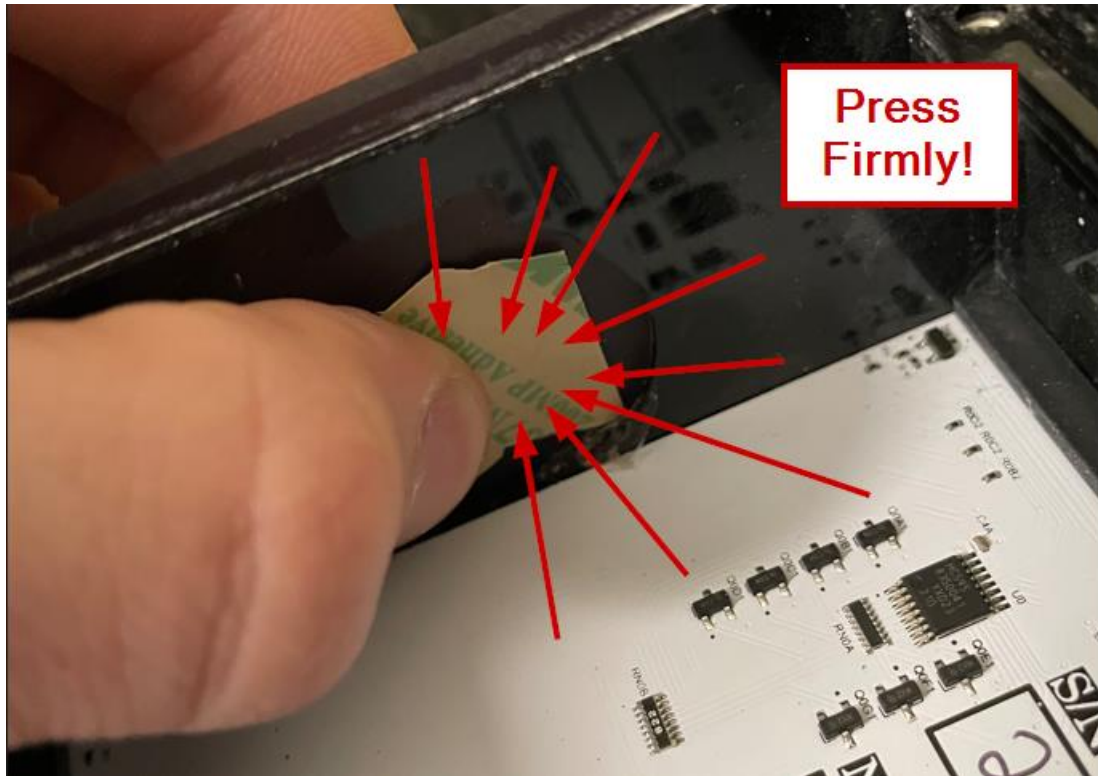
4. Removing Buzzer Hat

If the buzzer is still wearing its hat, use a pair of pliers to pull the tab back and remove it. If the hat is not removed, the buzzer sound will be significantly dampened.

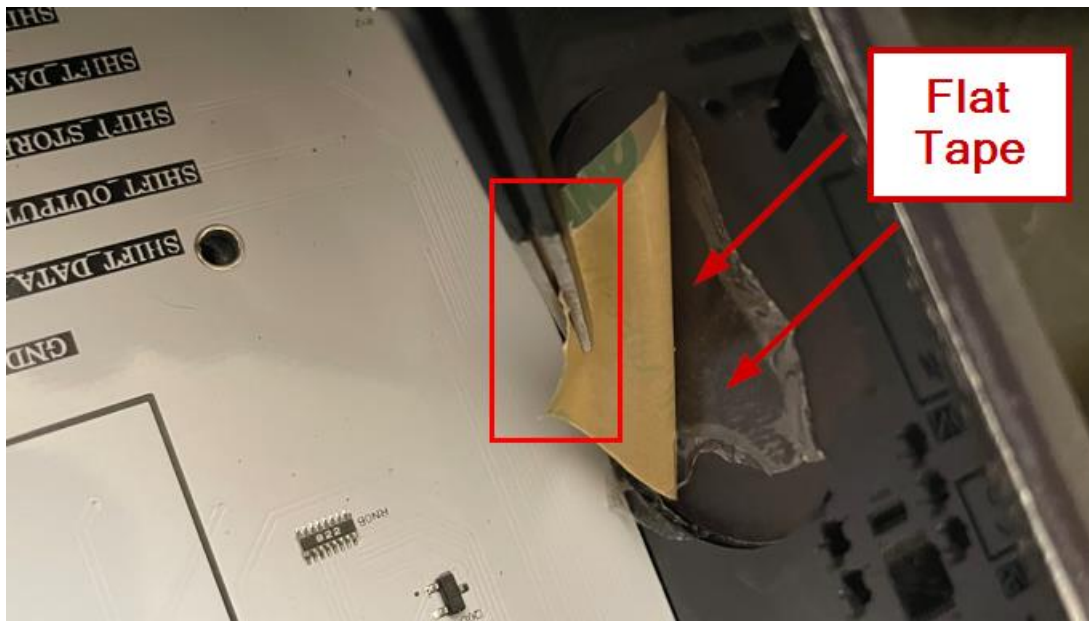


5. Applying Double-Sided Tape to Inner Enclosure Surface

Slice off a 1" piece of 3M 467MP 1" wide, 2 mil thick double-sided tape. Place the exposed surface in the snooze button divot of the Sinking Clock enclosure. Press the tape firmly into the enclosure and rub to ensure adhesion of all surface points.



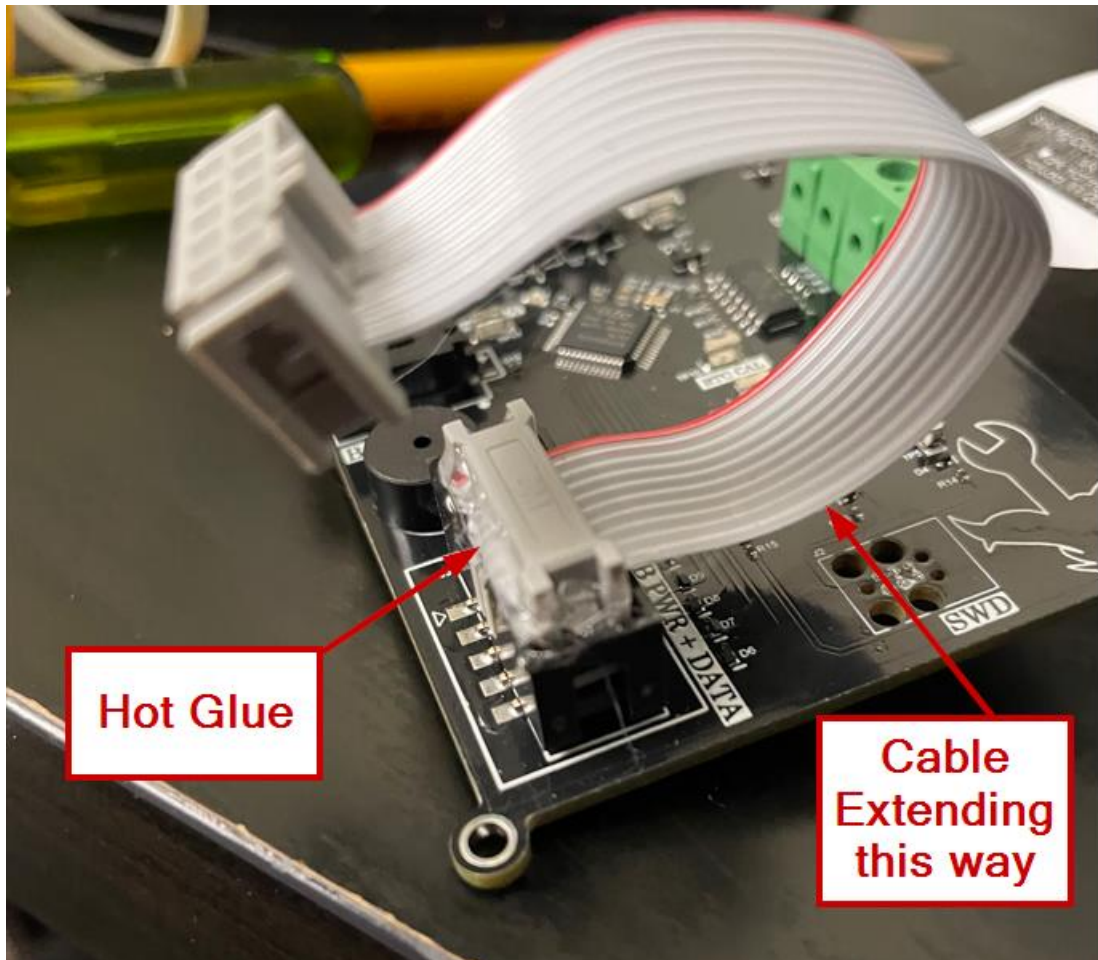
After letting the tape sit for 5 minutes, use a pair of tweezers to carefully pull back the brown transfer surface. Be careful not to wrinkle the adhesive part or pull it off of the enclosure.



Caution – once the touch sensor is adhered to the inner surface, do not place excessive force on it. This may tear it, break copper connections, or disconnect it from the Brain.

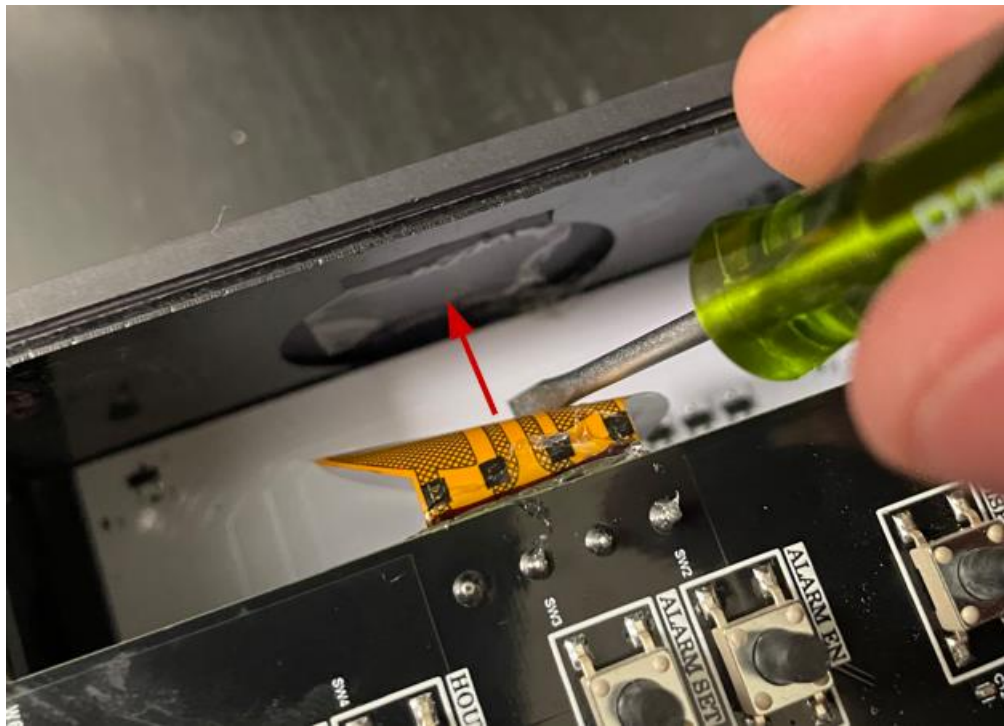
6. Connecting + Gluing IDC Cable to Brain PCB

Insert the IDC cable into the Brain PCB such that it extends towards the “LED PCB PWR + DATA” label. Use some hot glue to adhere the IDC cable to the socket.

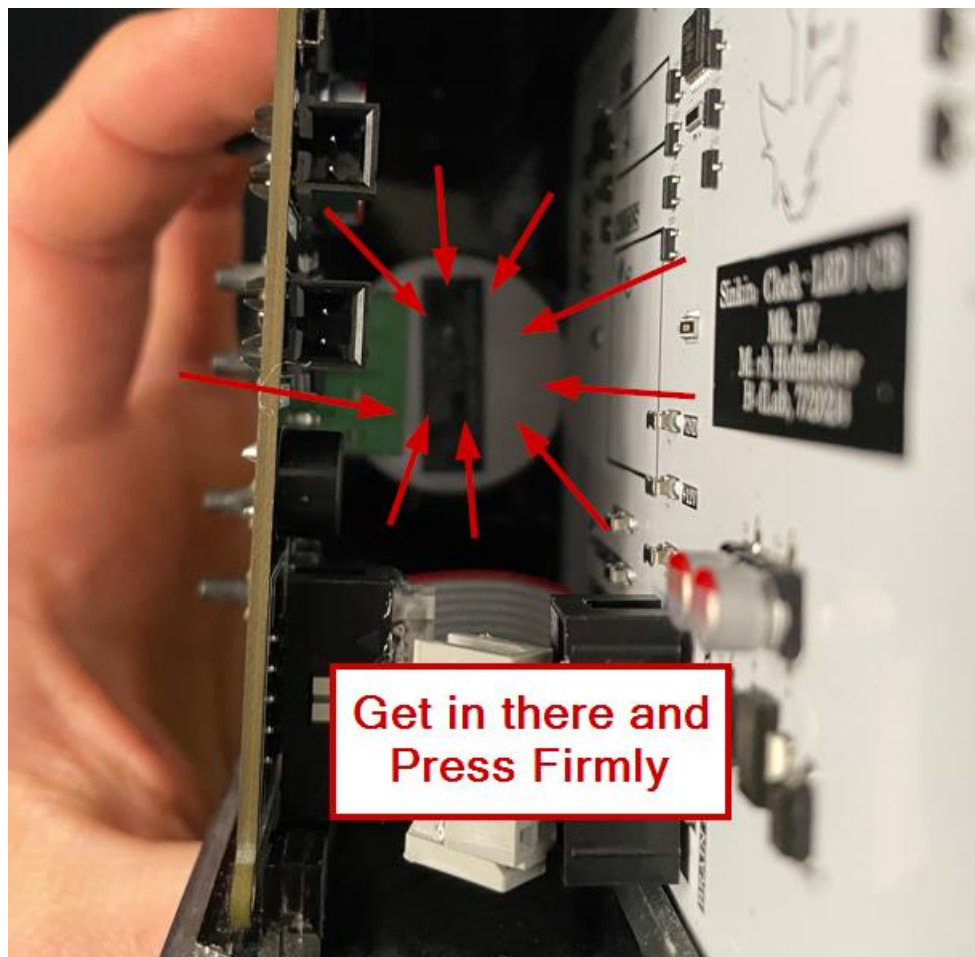


7. Mounting Brain PCB + Touch Electrode to Enclosure

Bend the touch sensor and adhere it to the exposed tape.

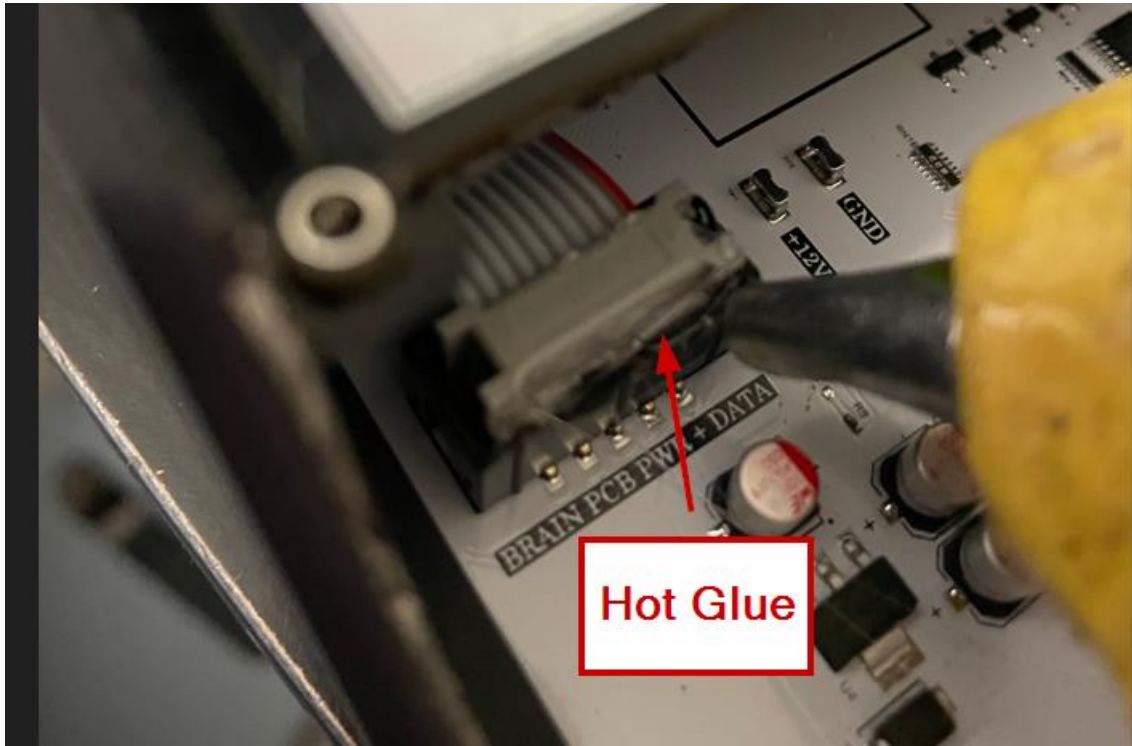


Important: the touch sensor will only adhere if it is pressed firmly on all points to the tape.



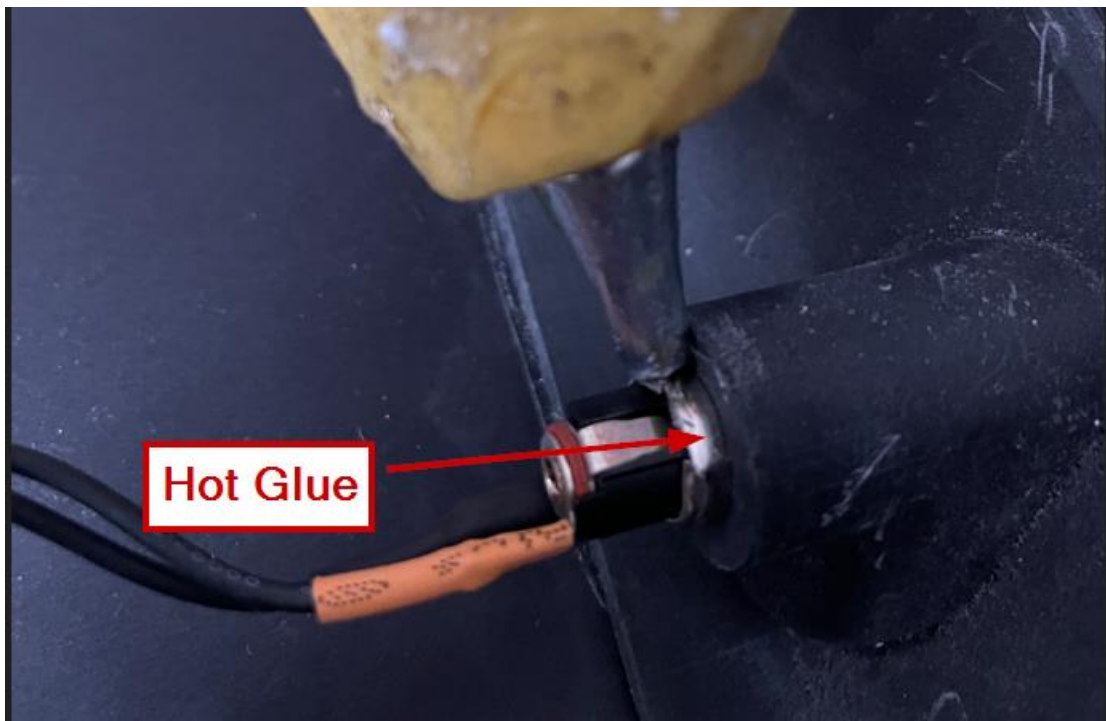
8. Connecting + Gluing the IDC Cable to the LED PCB

Connect the other end of the IDC cable to the LED PCB connector. Use hot glue to adhere the IDC cable to the connector.



9. Connecting the Barrel Jack to the Enclosure

Connect the barrel jack to the 3D-printed bottom piece. Use hot glue around the edge for mechanical integrity.

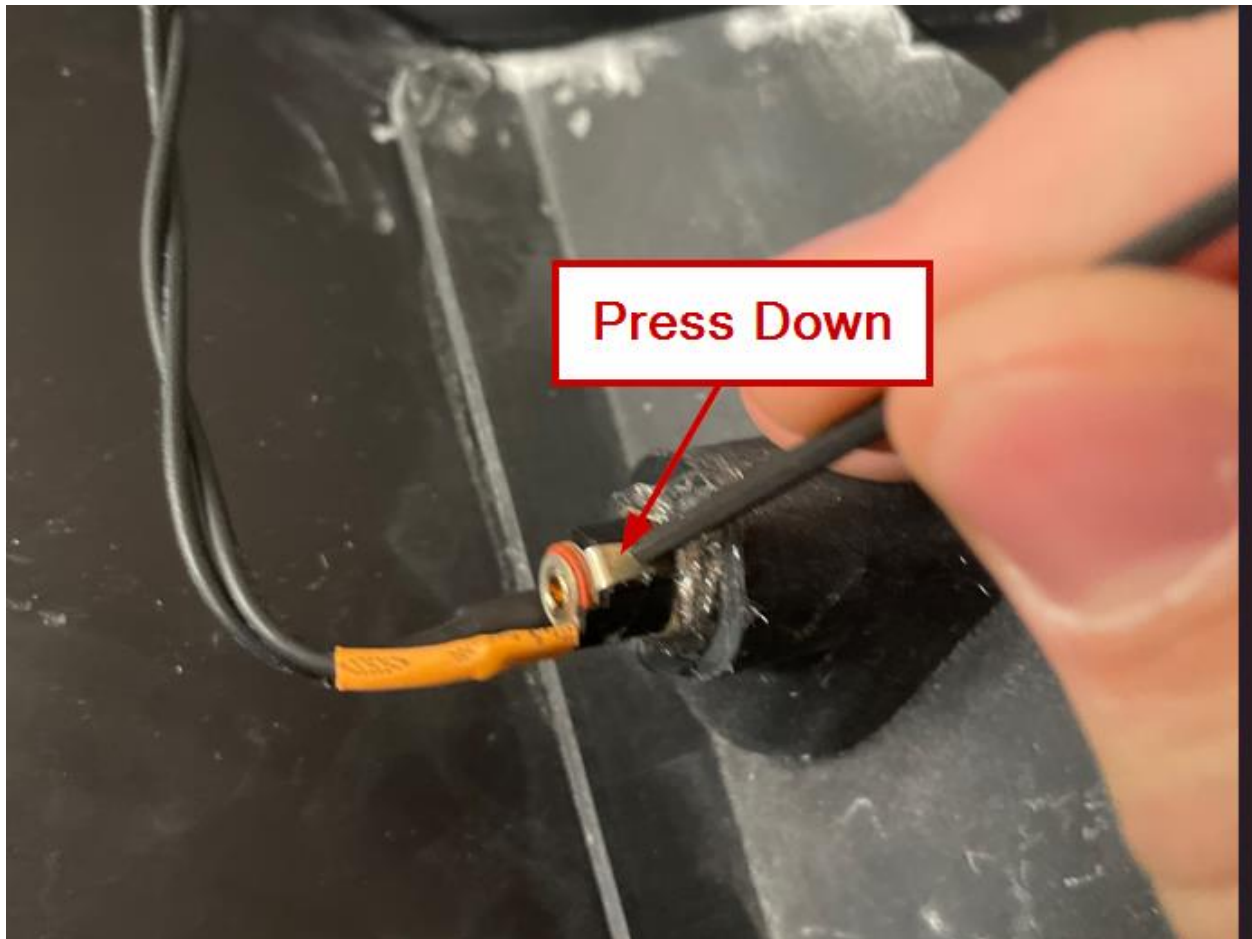


10. Connecting the Barrel Jack to the Brain PCB

Connect the other end of the barrel jack to the PWR port of the Brain PCB. **Caution:** connecting the barrel jack to the coin cell battery input will fry the Brain PCB. Since this connector uses claspings, hot glue is not needed for this step.



If the barrel jack is not making good connection with the barrel socket, you may need to slightly push the barrel jack's spring in.



11. (Optional) Connecting the Coin Cell Harness to the Enclosure

Connect the coin cell holder to the 3D-printed bottom piece. Use hot glue around the edge for mechanical integrity.

12. (Optional) Connecting the Coin Cell Harness to the Brain PCB

Connect the other end of the coin cell cable to the BATT IN port of the Brain PCB. Since this connector uses clasp, **hot glue is not needed for this step.**

13. Final Test in Enclosure

Once fully assembled, be sure to **test the clock in its entirety** to ensure no failures occurred in the manufacturing process.