ESP32 Mailbox Project- You've Got Mail

HomeHackery
Because "Stock" is Boring

Working with electricity and electronics can be extremely dangerous and may result in serious injury, death, electric shock, fire, or property damage. These instructions are provided for informational and educational purposes only.

- Always consult and follow local electrical codes, regulations, and manufacturer guidelines.
- High voltage and mains electricity should only be handled by qualified, licensed professionals.
- If you lack experience or are unsure, do not attempt any project—seek help from a certified electrician.
- Some diagrams or photos may omit safety equipment for clarity but do not imply it is unnecessary.

Use of these instructions is entirely at your own risk. The provider disclaims all liability for any damage, injury, loss, or expense arising from following or misapplying this information. Your safety is your sole responsibility.

Parts:

- Wireless doorbell https://amzn.to/4pVkZmS
- Schottky diode (e.g., 1N5819 or 1N5822), (optional but recommended)
- XIAO ESP32-C6
- Sealed micro switch https://amzn.to/48ZXovK

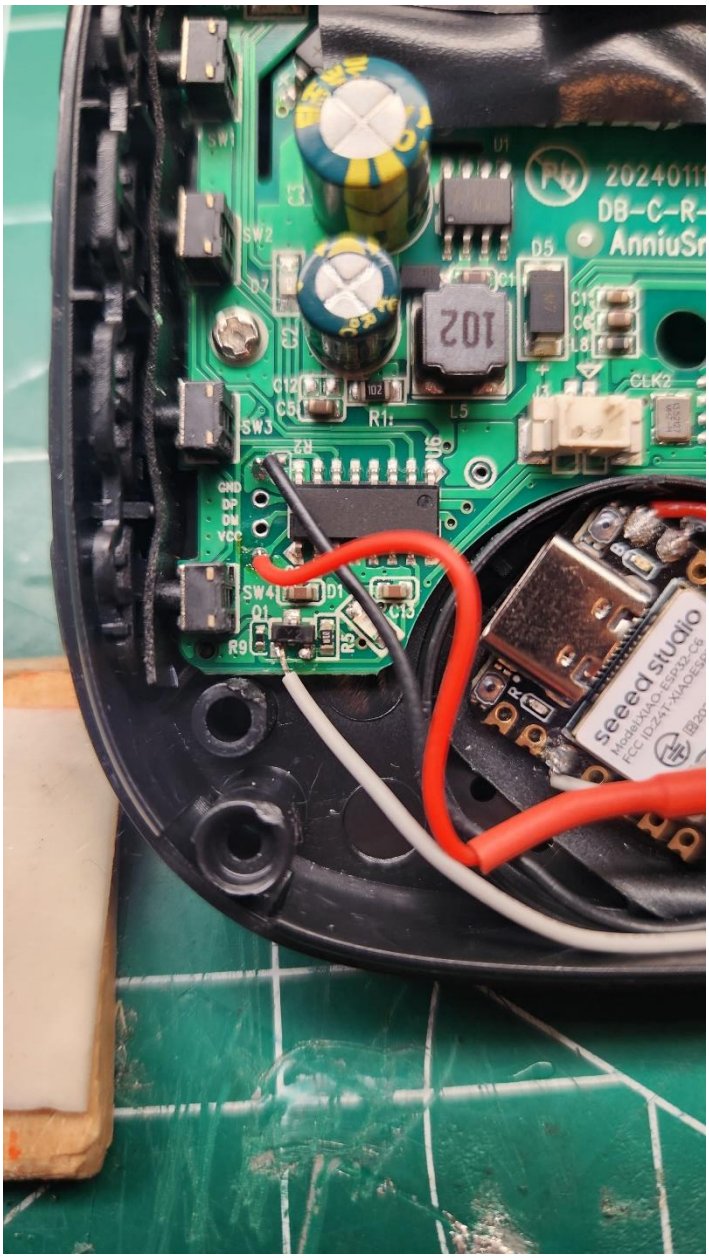
Software/ Schematics and printable instructions:

https://github.com/planedoctor/ESP32-Mailbox

Doorbell Receiver:

Open and find PNP Transistor marked Y2. This is super small and the trickiest part to solder on this project. Be cautious! You don't want any solder blobs where they shouldn't be.

Signal is picked up on base pin of PNP transistor SS8550 with Y2 marking and connected to GPI02 of the ESP32.



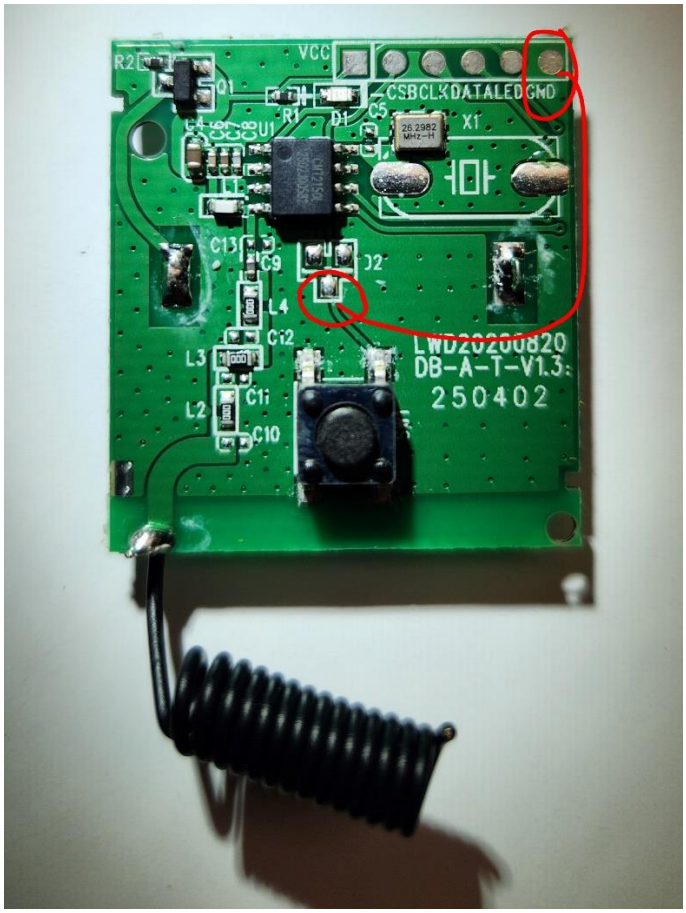
Power for the ESP32 is taken from the GND and VCC(5V) of the PCB of the receiver. It's recommended to add a Schottky diode to the VCC side as a safety precaution as there is not protection on the receiver for reverse current. I learned the hard way and got "magic smoke" from the inductor marked 102 on this board. You really should not need to plug in both the mains power and USB of the ESP32 at the same time and after installing the diode I never did connect both power supplies at the same time again. The ESP32 will back feed the low voltage circuit of the receiver and everything will work for testing. The receiver will power the ESP32 when plugged into the wall.

As a safety precaution I added some electrical tape over the high voltage areas of the board in case the ESP32 became dislodged.

You can leave the speaker attached and there is enough room to attach the ESP32 to the blue plastic with double sided tape. I didn't need the speaker so just removed it and the ESP32 fit right in the speaker housing.

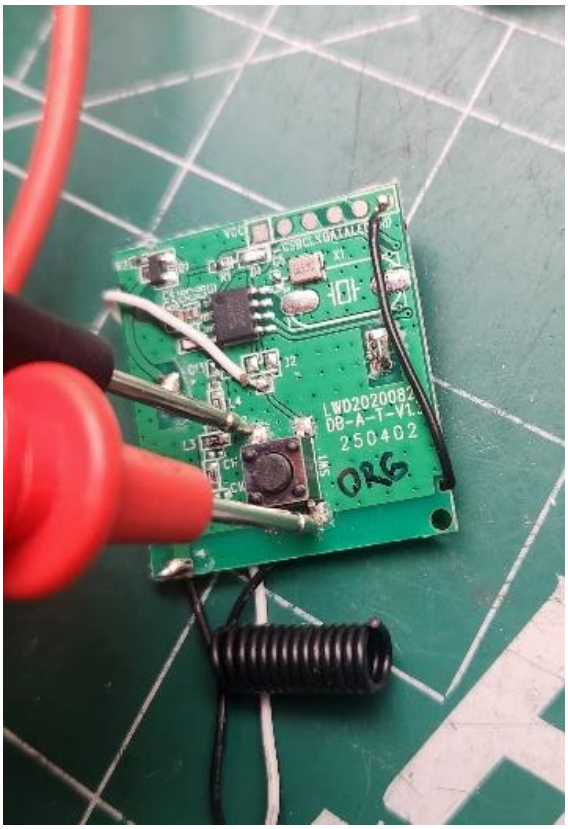
Doorbell Transmitter:

Open transmitter using the included flat plastic tool. Remove the battery. There a couple ways to wire in the switch.



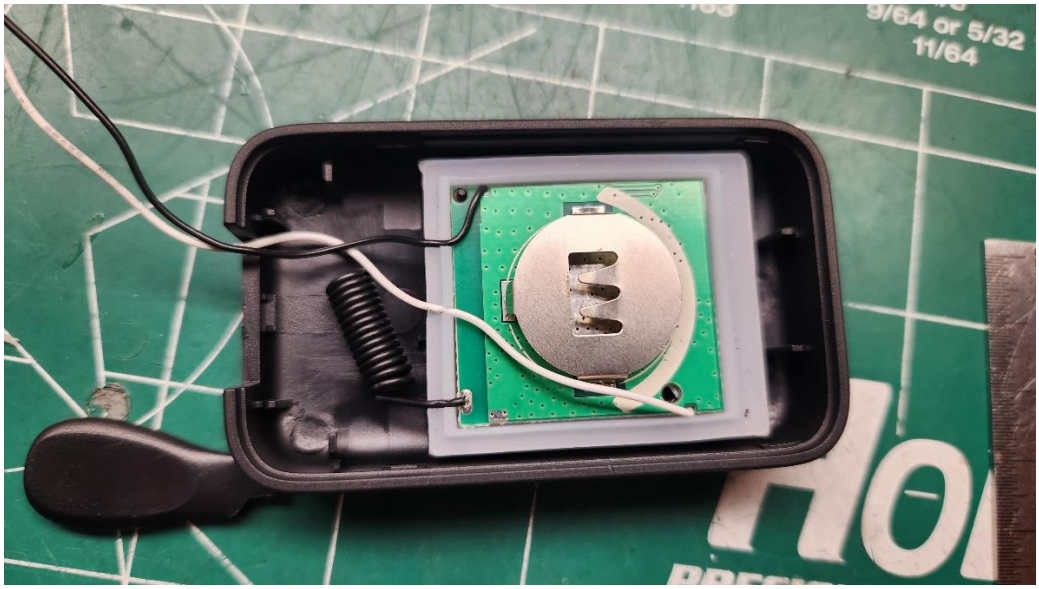
One is to provide a ground to the point shown.

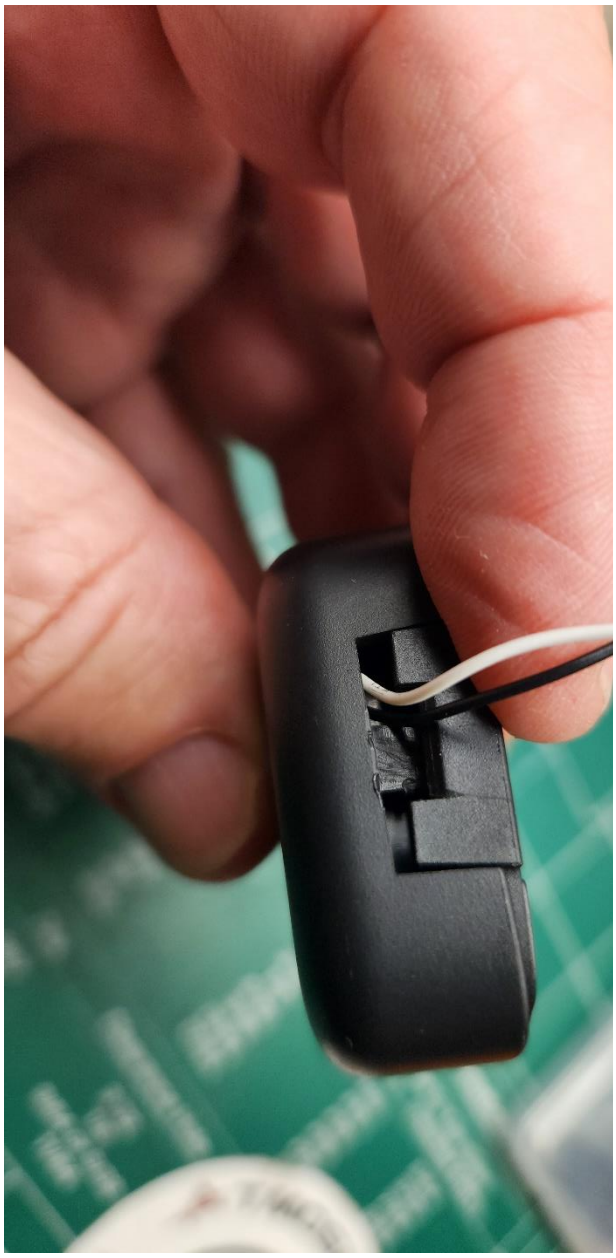
The door switch will be **between** these points with switch set to NORMALY CLOSED.



The other way is to just bypass the momentary switch. Left side- right side pins. Image shows test probe on correct pins. It doesn't matter if both are on top or bottom the left side- right side is the contacts.

I used the cutouts on the PCB for routing wires. I made small cuts to ONLY the silicone lip just like the one made at the factory for the antenna wire. You can use a dab of hot glue or tape to hole the wires in place while closing. Reinstall the battery and test before closing.





When closing the case, you will see a gap the wires can be guided through without pinching. I also modified the opening tool to provide for the wires. 😊

Mailbox:

I have a standard metal box but anything would work as long as you have room to add a switch and it would actuate when the door is opened. I marked the areas on the box that are covered by the post before I removed it so I know what areas I have to work with.

I used some 3M Double Sided Tape VHB to place the switch and transmitter case. In my situation I needed a shim for the door switch so I 3D printed the white piece. Just place the switch as close as you can so the actuator is all the way out when the door is opened. Shim so that the switch is actuated when door is closed. You can also bend the arm of the switch a bit if needed.