# Experimental build instructions

9/2/2025

This experimental configuration uses a TIP120, 8.2 Ohm Resistor and a Revised Main Body (A) part for higher sensitivity and accuracy measurements. Build the DIYNAFLUOR as per the Base build instructions, with the following alternative wiring schematic and parts.

Note: For builders with limited electrical engineering experience, it is recommended that this Experimental build is only attempted after the Base DIYNAFLUOR has been attempted and verified.

**Parts Required: Base DIYNAFLUOR BoM + The following additional parts.**

|  |  |
| --- | --- |
| **Part** | **Link** |
| TIP120 - TRANS NPN DARL 60V 5A TO-220 | [Link](https://www.digikey.com.au/en/products/detail/stmicroelectronics/TIP120/603564?so=90703501&content=productdetail_AU&mkt_tok=MDI4LVNYSy01MDcAAAGYNQyxqsRdJyh5G26PQ70QkTAawQtXGiZzqs7sSC3Vasdfto5ZCqXL_9Qc6pOmka4CzjMmD1xFlP0Ke5eODOrxNfhtdj9KbJqMDO-AC7gn) |
| RES 8.2 OHM 5% 2W AXIAL | [Link](https://www.digikey.com.au/en/products/detail/vishay-beyschlag-draloric-bc-components/PR02000208208JR500/596237?so=90703501&content=productdetail_AU&mkt_tok=MDI4LVNYSy01MDcAAAGYNQyxqg167KwkEpcK79wzFAdiugabRs-si4hp4SkPH9fSpKJbe3CBNXAfg9RkuengPs9aFVtKN12VqVp3oYm5--XA7mL4eZezFvatMgti) |
| Through Hole Resistor, 2.2 kohm, ROX Series, 2 W | [Link](https://au.element14.com/neohm-te-connectivity/rox2sj2k2/res-2k2-5-2w-axial-metal-oxide/dp/1738643?CMP=e-email-sys-orderack-GLB) |
| 2 X  1 x F-F hookup cable (10 cm) | [Link](https://www.ebay.com.au/itm/196101531443) |
| 1 x Main Body (A) Experimental | See Experimental Folder for STL file |

Note: the 68 Ohm resistor in the base DIYNAFLUOR build is not used.

**IMPROTANT:** The Main Body (A) Experimental part requires the excitation and emission holes to be drilled out with a 3 mm drill-bit prior to assembly. Do not drill through to the other side of the sample chamber.

A drill being used to drill a small piece of electrical equipment

AI-generated content may be incorrect.

**Wiring schematic:**

A circuit board with wires

AI-generated content may be incorrect.

Mount the TIP120 onto the Filer Cube during assembly by bolting it in place at the shown position. (This uses the upper nut and bolt assembly that holds part A and B together).

A small black square object with wires

AI-generated content may be incorrect.

Tip: Mount the TIP120 at an angle to allow room for the JST connector port.

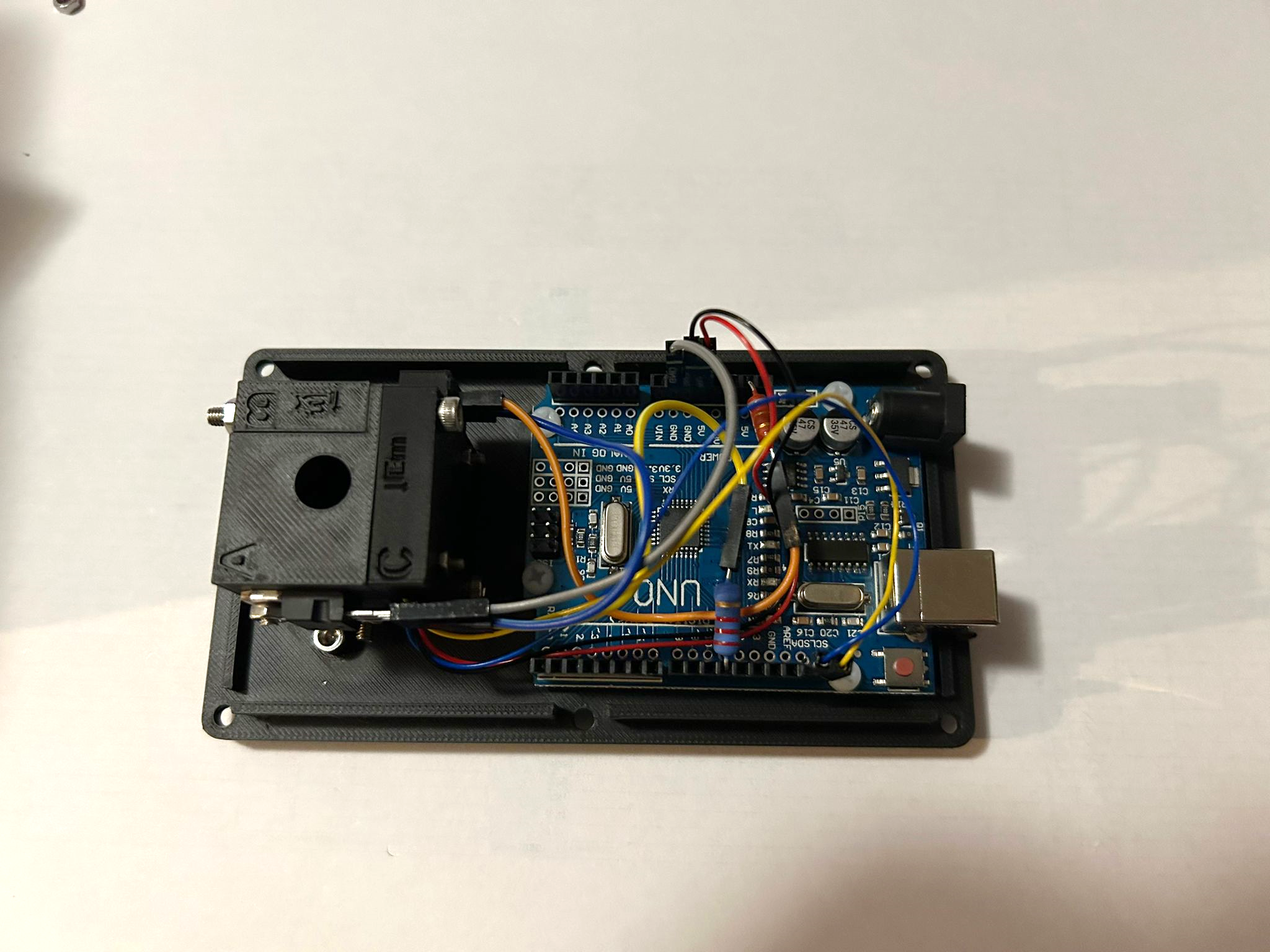
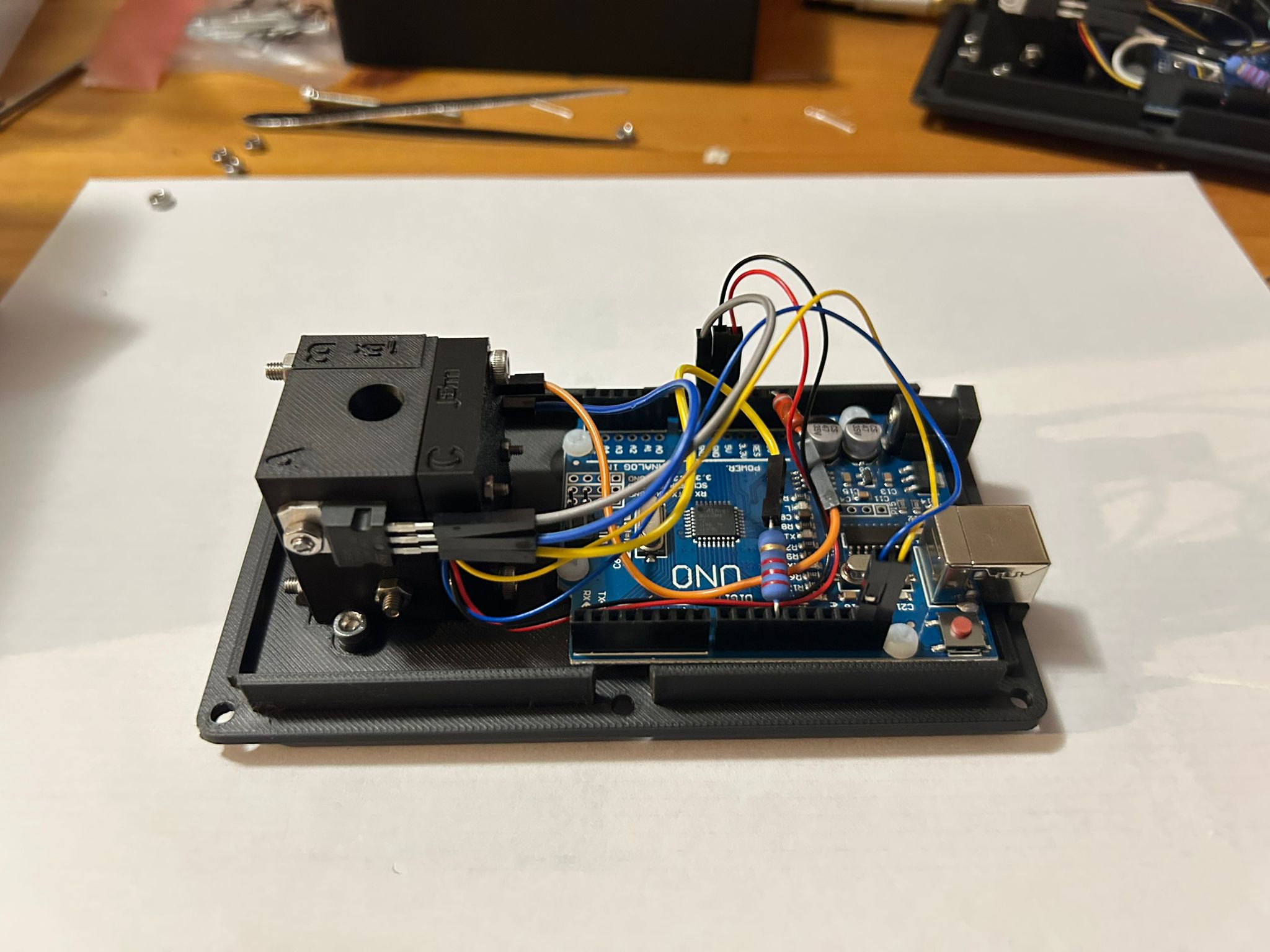
A black rectangular device with wires

AI-generated content may be incorrect.

Once the JST cable is inserted, rotate the TIP120 to a horizontal position.

Below shows the correct wiring configuration for the Experimental Tip120 design.

Note: Both resistor wires have been cut to ~ 10 mm, as per the 68 Ohm resistor in the base build.



If you have any issues or interesting observations with this Experimental build, please contact [w.anderson1@uq.edu.au](mailto:w.anderson1@uq.edu.au), or leave an issue on our GitHub repo. <https://github.com/traulab/DIYNAFLUOR>