

# Magnetar Handheld Launch Controller Assembly Instructions

1. Print top panel sticker, cut it out, and adhere it to the front panel of the enclosure. For best results, print using the following settings if applicable:

- 2400 DPI
- Glossy Paper
- NO SCALING



2. Drill all the holes, noted by a red + shape. For the rectangular hole, you will need to drill two large drill holes up to 1/2" in diameter on each side of the + symbol, then use a mini hacksaw and a file to get the hole shape.



3. Take the back plastic mounting of a yellow 4mm banana socket and using the mini hacksaw, cut it in half. Then mount the banana socket in the Safety Key hole. Then using the hacksaw, trim off the excess metal from the back side of the socket, leaving at least two full threads behind the fastening nut. You can use a file to smooth it out once complete.



4. Install the launch push button switch and the battery level indicator on the top panel, and then mount two 4mm banana sockets on the front panel. The NC side of the switch needs to face Left.



5. Assemble the Safety Key circuit board by mounting the battery clips and soldering them in place. Then cut one of the battery extension cables, leaving six inches of wire behind the male connector (mates with the battery connector). Strip  $\frac{1}{4}$ " from both red and black wires and dip the copper strands in solder flux. Solder the black wire into the Safety Key circuit board from underneath as shown.



6. Screw in the 20 amp self-resetting fuse, placing a small #4 washer between the plastic housing and the fastening nut. Then screw in two 15mm standoffs for the Safety Key circuit board.



7. Cut a 4" piece of 16 gauge wire (negative) and strip about ¼" from each end. Then solder one end of that wire and the negative wire from the battery level meter to the Safety Key circuit board. Both these wires will be soldered in from the underside of the circuit board. Use to fastening nuts to mount the circuit board. The metal of the banana socket cannot touch both connectors. If they do, file down the excess.

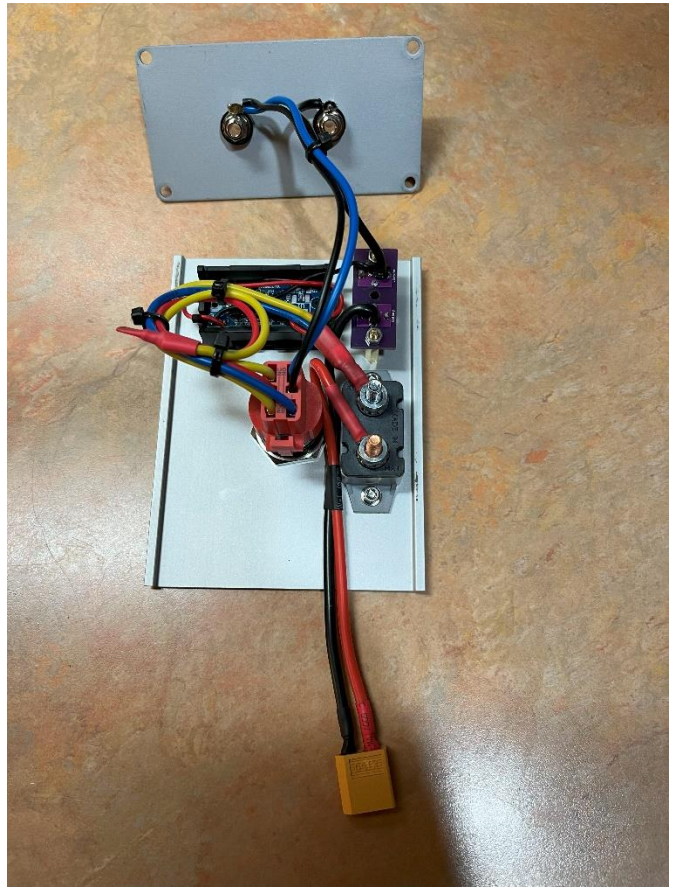
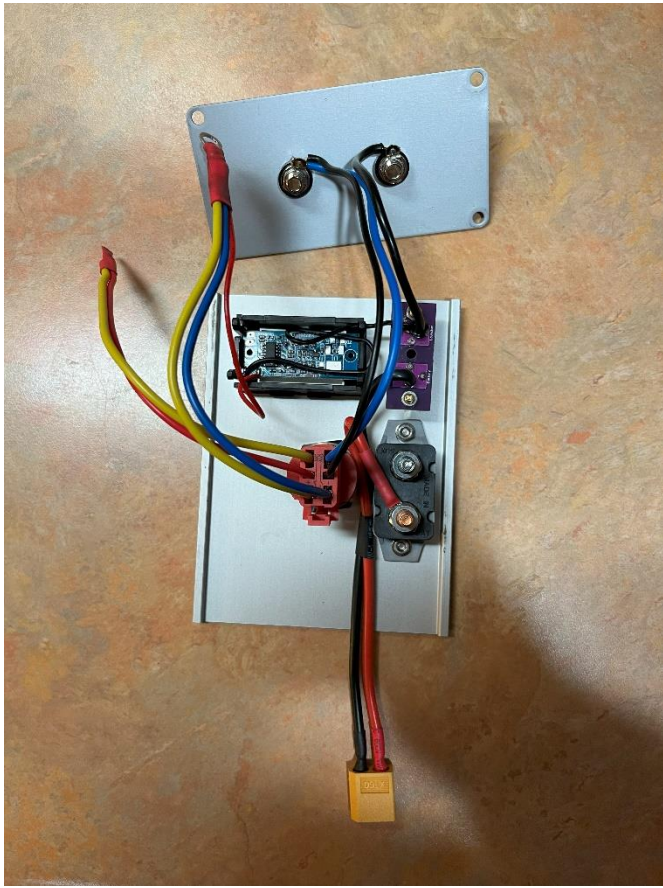


8. Remove the outer Insulation from a round terminal connector. Cut a ¾" piece of heatshrink tubing and set it over the red wire of the battery cable, away from the open end. Widen the slit of the terminal connector, insert the bare end of the red wire into the opening, crimp it down snugly, and then solder the terminal connector to the red wire. Once the connection cools off, slide the piece of heatshrink tubing in place and shrink it with a lighter or heatgun. Attach the terminal connector to the copper colored post of the fuse.



9. Solder the free end of the 16 gauge wire coming from the Safety Key circuit board to the right front panel banana socket. Twist the ends of the top-right blue wire and the middle-right black wire together and solder them to the left front panel banana socket. Twist the ends of the top-left yellow wire and the middle-left red wire, solder them together, and place a ¾" piece of heatshrink tubing halfway over the exposed connection. Using a heatgun or lighter, secure the heatshrink tubing over the connection, pinching the end of the tubing while it is still hot to close it. Twist together the ends of the red wire from the battery level meter, the bottom-yellow switch wire, and the bottom-blue switch wire. Following the same process as with the other terminal connector, set 1" piece of heatshrink tubing onto the wires, insert the exposed ends of the wires into the connector, and solder them in place. Then set the heatshrink tubing in place and heat it till it shrinks. Connect the terminal connector to the silver colored post of the fuse, then use small zip ties to organize the wires.





10. Apply a liberal amount of fast acting glue to the fuzzy side of the Velcro strap and glue it to the inside of the back panel as shown. Then cut a piece of foam so that it fits to the inside of the screw holes. Apply a liberal amount of glue to the underside of the foam and glue it in place over the strap.



11. Complete the assembly of the controller by sliding the top panel into place, connecting the battery, and screwing the front and back panels.
12. Assemble the launch leads as pictured. They should be at least 18 to 20 feet long.



**\*\*\* DISCLAIMER\*\*\***

These instructions are strictly for education use. By using these assembly instructions, you agree to assume all liability for the building and the use of the device described in this document, whether all or in part.