

# HackMan3D Orbit Controller

## Assembly Guide

### 1. Preparing the Hall Effect Joysticks

Bend the two side mounting tabs downward slightly (do not flatten them completely). Cut off the third mounting tab opposite the connector pins. Bend the five connector pins outward until they are horizontal.

### 2. Wiring the Hall Effect Joysticks

Cut one female connector from each jumper wire. **Before soldering, slide a piece of heat-shrink tubing onto every wire.** Once soldered, the remaining connector may be too large to pass through the tubing. Solder the wires exactly as shown in the wiring diagram. **Keep the recommended wire colors** to make final assembly and troubleshooting much easier. Move the heat-shrink tubing over each solder joint and shrink it to insulate and reinforce the connection. Repeat for all four joystick modules. ■ **Important:** If you forget the heat-shrink tubing before soldering, you may need to desolder the wire to install it afterwards.

### 3. Preparing the Knob

Before installing the joysticks into the Electronics Carrier, press the four printed **TPU balls** onto each joystick shaft. These must be installed before mounting the joysticks.

### 4. Button Module

If using the optional mechanical buttons, solder the wires according to the wiring diagram. Install the switches, connect the common ground once the switches are installed, route the wires through the dedicated holes and secure the Button Module using **2 × M3x8** screws.

### 5. Electronics Carrier

Install the four prepared Hall Effect joysticks and the Arduino Pro Micro onto the Electronics Carrier. Route all wires through the dedicated channels, place the assembly into the Base and secure it from underneath using **4 × M3x6** screws.

### 6. Lower Knob Assembly

Assemble the **Knob Lower Base** and **Knob Lower Cap** around the TPU balls. Secure both parts together using **4 × M2x10 countersunk** screws.

### 7. Top Cover

Install the Top Cover using **6 × M2x6 countersunk** screws.

### 8. Upper Knob Assembly

Place the **Knob Grip (TPU)** between the **Knob Upper Base** and the **Knob Upper Cap**. Secure the three parts together using **4 × M3x10** screws. Finally, attach the complete knob assembly using **1 × M3x12** screw.

### 9. Firmware Installation

Connect the controller via USB-C. Install the NavCore board package, open the firmware in the Arduino IDE and upload it to the Arduino Pro Micro.

## 10. Driver Installation

Once the firmware has been successfully uploaded, install the latest **3Dconnexion Driver (3DxWare)** for your operating system. Reconnect your Orbit Controller after the installation. It should be automatically detected as a compatible 3D navigation device and be ready to use with supported CAD and 3D applications. **Note:** The NavCore board package is only required to upload the firmware. The 3Dconnexion driver is required to use the controller.

### Hardware Summary

#### M3 Screws

- 4 × M3x6
- 2 × M3x8
- 4 × M3x10
- 1 × M3x12

#### M2 Countersunk Screws

- 4 × M2x10
- 6 × M2x6