

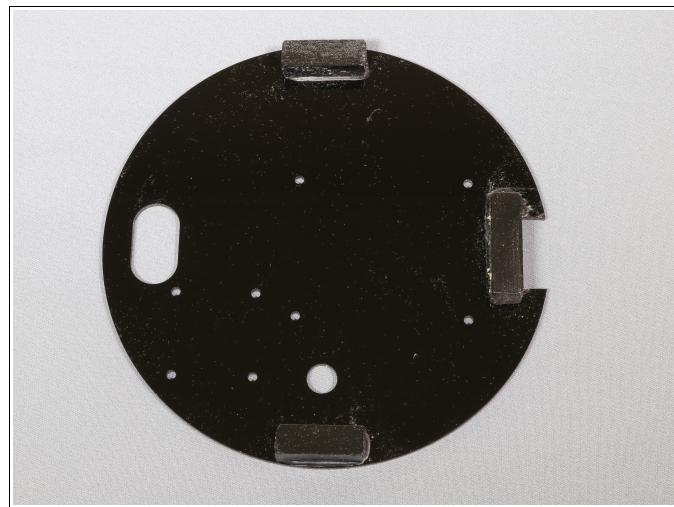
Raspberry Pi Eye Kit

Assembly Instructions

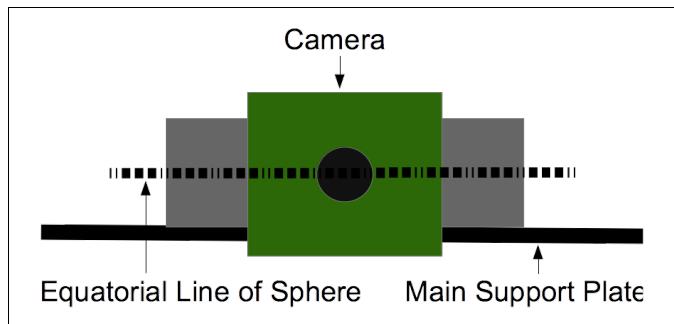
Revision 1.0 – June 23rd, 2017

The Pi-Eye Kit in its current form is not completely ready to assemble. You will need to drill some holes and trim openings in the sphere. Assembly will require some plastic epoxy and gluing. A metric hex-key is required to tighten some set screws. A support stand does not come with the kit. None of these items should be a barrier to the maker and all can be found at your local hardware store.

1. Remove the protective covering from both sides of the Main Support Plate and the Motor Support Plate. Use the template “Main Support Plate” to mark the center points for the three support blocks at the camera (front) and the two sides (90 degree points).

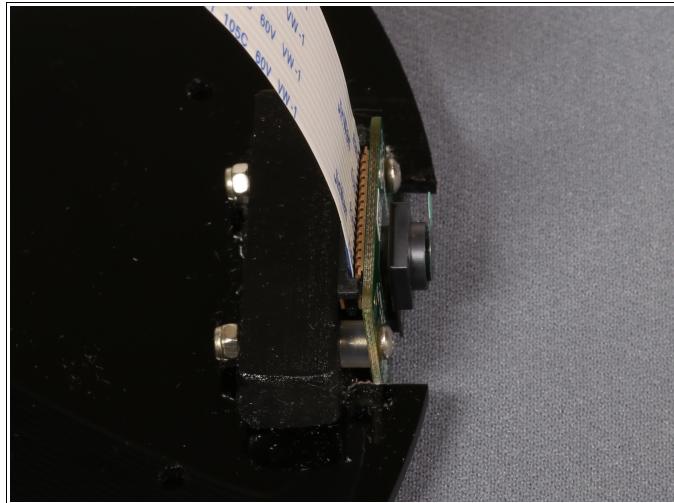


2. Glue the camera mount block and the two side support blocks to the top surface of the Main Support Plate. Use “Loctite Epoxy Plastic Bonder” or similar adhesive which will bond well with acrylic. Note: The Main Support Plate is designed to be positioned slightly below the equatorial line of the sphere. The center-line of the camera and the center-line of the mount blocks should be on the equatorial line.



3. Center the camera lens on the center-line of the camera mount block. Drill two 2 mm.

holes for the camera board. Mount the camera board (flexible tape up) with two M2x16 screws, nylon washers and nylon locknuts.



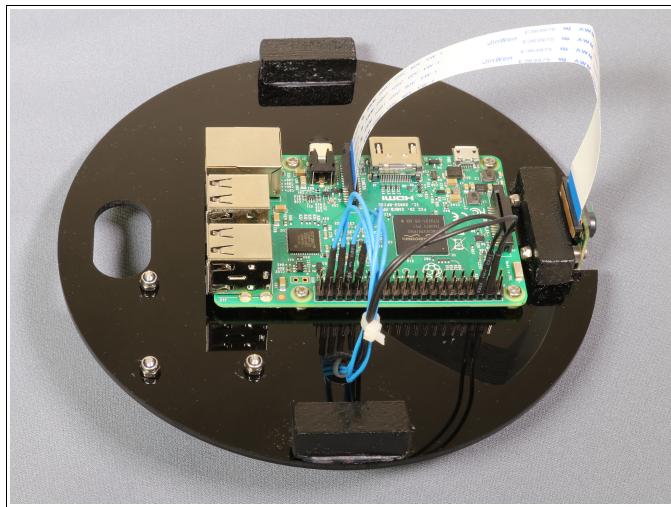
4. Insert the SD card into the Raspberry Pi. Mount the Raspberry Pi computer with four M2.5x12 screws, nylon washers and nylon locknuts.



5. Mount the Stepper Motor Controller Board on the bottom side of the Main Support Plate using three M2.5x12 screws, nylon washers and nylon locknuts.



6. Attach six stepper motor control wires to the Raspberry Pi and Stepper Motor Controller Board. Thread these through the center opening and secure with a cable tie on each side.

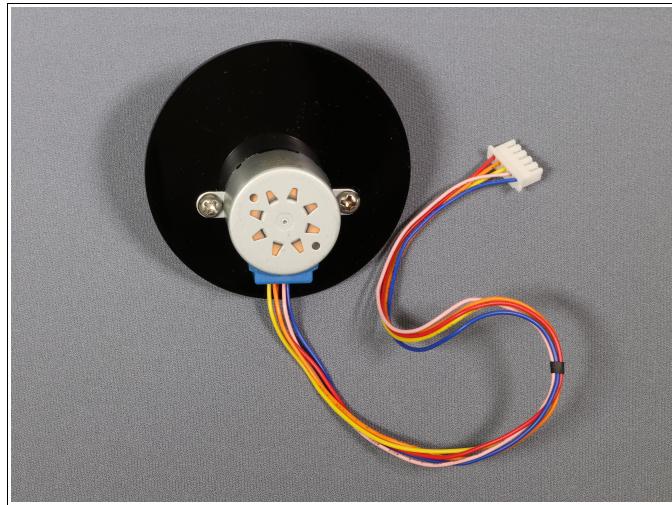


GPIO Header Pin	Motor Controller Pin	Function
Pin 4	+ 5-12V	Power: +5V
Pin 6	- 5-12V	Ground
Pin 31 (GPIO 06)	IN1	Control 1
Pin 33 (GPIO 13)	IN2	Control 2
Pin 35 (GPIO 19)	IN3	Control 3
Pin 37 (GPIO 26)	IN4	Control 4

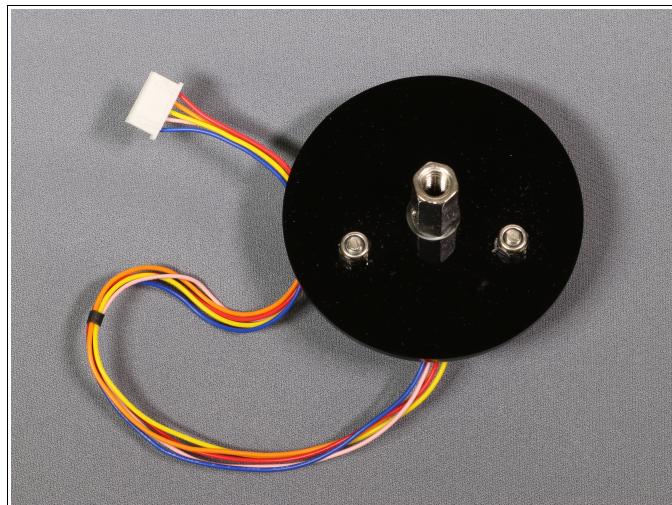
7. Place the front-facing half-sphere (the edges will overlap and cover the rear-facing half-sphere) on the markup template. Mark small dots on the top, sides and bottom of the sphere. Using a tape or cut paper find the center point where the camera lens will

be placed. Drill an 8mm hole for the camera lens. The outside face of the camera lens should be flush with the surface of the sphere.

8. Mount the Stepper Motor on the Stepper Motor Support Plate using four M4x10 screws, nylon spacers and nylon locknuts.



9. Attach the motor support coupler to the motor shaft with two M4x4 set-screws.



10. With a small drill and/or grinder (e.g. a Dremel tool) cut an opening for the motor shaft and coupler and a second opening for cables to exit in the rear-facing sphere. The cable exit opening should be high enough to clear the motor support plate. Fit the shells together and at the 90-degree marks drill four holes along the equatorial line to secure the front and back spherical shells to the side mounting blocks.

11. Mount the front-facing sphere in a vertical position and tape the Motor Support Plate in position making sure that the motor shaft is centered and aligned vertically. The motor mounting screws should be positioned in the rear-facing sphere. Run a small bead of

plastic-bonding adhesive along the edge of the plate to affix it to the base of the front sphere. When the adhesive has set remove the tape and complete the bead in the front sphere. The rear sphere will not be glued and must remain removable for service of the unit.

12. Place cables to be used through the outside and inside openings and permanently mount the Main Support Plate to the front and back spheres. Some suppliers sell "Thin HDMI" cables which are smaller and more flexible than regular HDMI cables and which are preferred for this device. A battery pack may be mounted on the underside of the Main Support Plate allowing the Eye to work with no cables at all (WiFi connection to the Pi).

Pay special attention to the alignment of the camera lens in its opening. Pressure on the camera lens may affect the focus.

13. Mount the completed Eye on its stand. Any tripod mount will work. Mounting hardware for CCTV security cameras will work as well. The mounting can be fabricated using a 1/4x20 bolt and nuts. The top nut securely fastens the motor coupler to the mounting bolt to prevent unwanted turning.

