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WeatherBox For Raspberry Pi Camera User Guide

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The WeatherBox is a plastic weatherproof housing for the Raspberry Pi version 2 (v2) camera module. It is intended for use on Autonomous Surface Vessels (ASVs), but could be used in any application where there is a need to take pictures outdoors with the Raspberry Pi camera and a need to connect the camera to other electronics such as a Raspberry Pi computer in a separate enclosure.

CAUTION: When properly assembled, the WeatherBox is designed to be used outdoors in rain or any type of weather. However, it is NOT rated for immersion in water and should not be used as an underwater camera enclosure.

Parts List

1. WeatherBox Camera Enclosure (120 mm x 60 mm x 55 mm) with 36 mm outer diameter threaded bottom.

2. Hex locking nut for attachment to threaded bottom of camera enclosure.

3. Circular 2 mm thick plexiglass plate with 4 holes for mounting to the face of the weatherbox.

4. 43 mm x 5 mm rubber o-ring for mounting underneath plexiglass plate.

5. 36 mm x 3.5 mm rubber o-ring for mounting on the flange at the top of the threaded portion of the WeatherBox.

6. Four M3 screws for fixing the plexiglass plate and larger o-ring to the front flange of the WeatherBox.

7. (WeatherBox-CAM models only) Raspberry Pi v2 Camera Module and ribbon cable.

Required and Recommended Equipment

1. 2.5 mm hex size Allen key for tightening M3 screws.

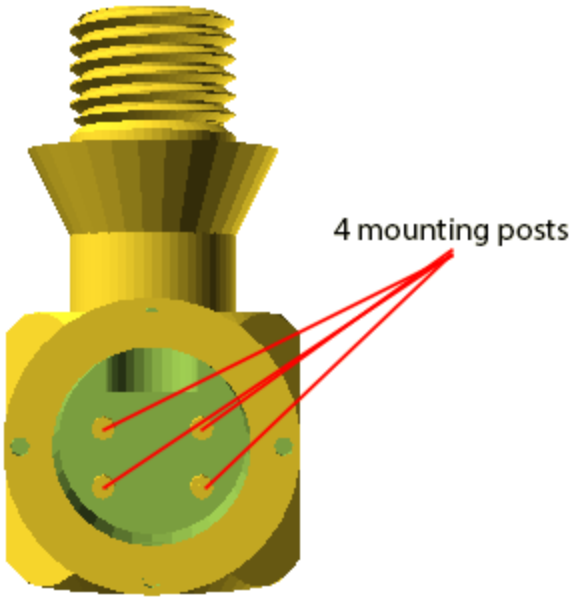
2. Electronics enclosure with 37 mm diameter hole for housing Raspberry Pi or similar processor equipment.

3. Silicone grease (ex: Trident silicone grease) is recommended for application to the rubber o-rings prior to installation.

Assembly

1. With the ribbon cable connected to the Raspberry Pi v2 Camera Module, thread the ribbon cable through the large, front opening of the Weather Box Camera Enclosure, so that the ribbon cable emerges from the bottom of the threaded hole.

2. Make sure that the camera lens is facing outward and gently snap the 4 holes of the Camera Module circuit board over the 4 small (2 mm diameter) mounting posts. Be careful not to press too hard. The erasure end of a pencil or similar can be useful for pressing in the circuit board at the corners to get it securely in place.



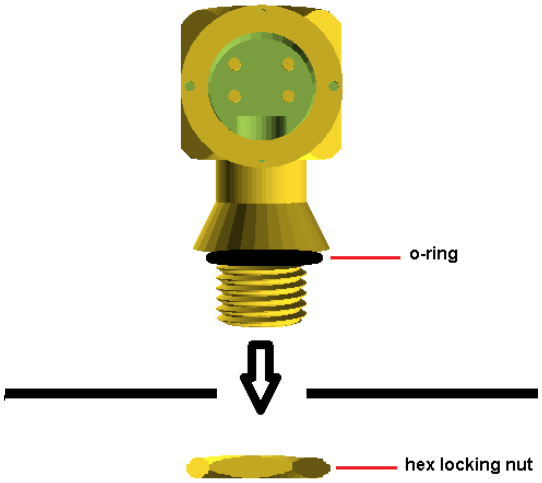
3. Place the plexiglass plate over the front opening of the WeatherBox, lining up the holes in the plexiglass plate with the holes on the front face of the WeatherBox. Insert the M3 screws in the bottom 3 holes, and partially tighten them, leaving enough room to insert the larger rubber o-ring between the plate and the front flange. We recommend rubbing a small amount of silicone grease on the o-ring prior to installation, to help preserve it for long-term use.

4. Once the o-ring is properly centered, insert the 4th M3 screw and tighten each of the screws in turn. Do not over-tighten any of the screws too much. A thin circular portion of the o-ring should appear to be “flattened” against the plexiglass plate once all of the screws are sufficiently tightened.

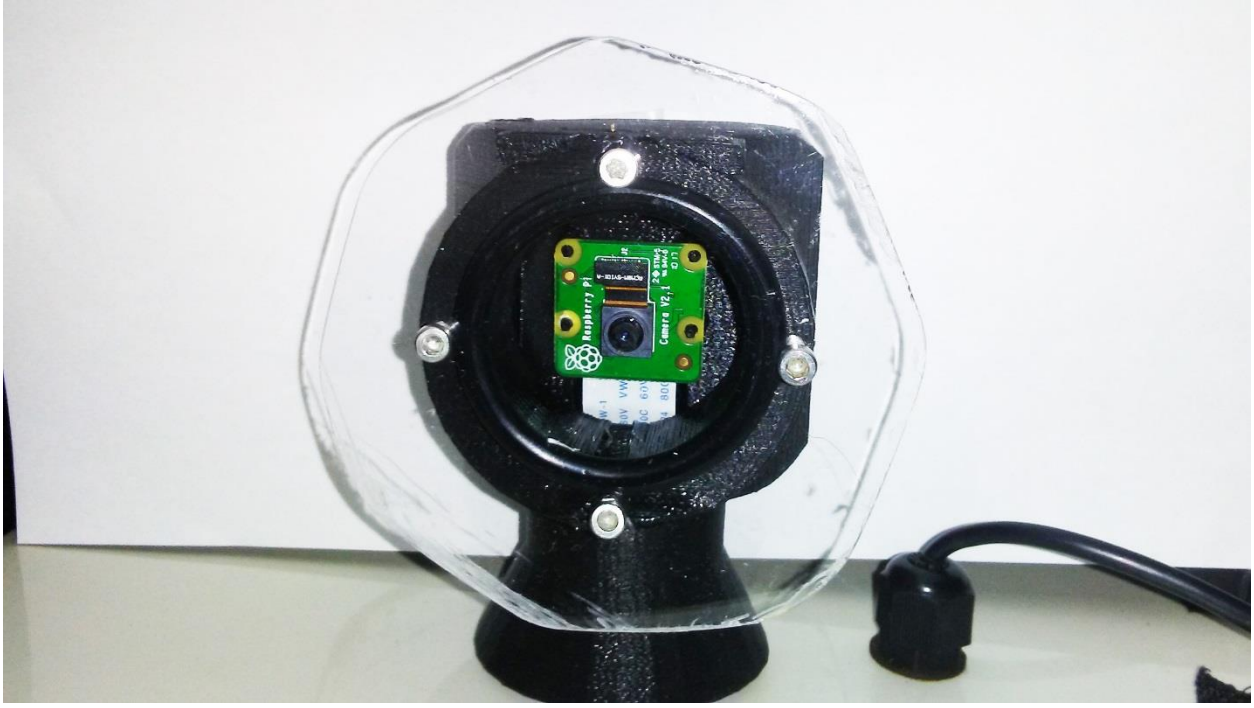
5. Prepare the electronics housing for the Raspberry Pi or other microprocessor equipment by drilling a circular hole about 37 mm wide (it needs to be just slightly wider than the outer thread diameter on the WeatherBox). Ensure that any burrs or other irregularities are removed after drilling.

6. Slide the smaller (36 mm x 3.5 mm) o-ring over the threaded portion of the WeatherBox. We recommend rubbing a small amount of silicone grease on the o-ring prior to installation, to help preserve it for long-term use.

7. Insert the threaded end of the WeatherBox into the hole created in step 5 and slide the hex locking nut over the ribbon cable and tighten it onto the threaded end so that the smaller o-ring makes a good seal against the top of the electronics enclosure. Just hand-tighten with a reasonable amount of force.



8. Connect the free end of the ribbon cable onto your other equipment and test it out. If the Raspberry Pi camera board is not suitably level within the WeatherBox, the rim of the WeatherBox might be visible in your pictures. Unscrew and remove the plexiglass plate and o-ring, and use the erasure end of a pencil or similar tool to gently push in any corners of the camera board that might be sticking out more than the others. Replace the plexiglass plate and o-ring as in steps 3 and 4 and try taking another picture.



Cleaning and Maintenance

1. To clean the plexiglass window, use a soft cloth with either clean water or rubbing alcohol.

2. To prevent the o-rings from becoming dry or cracked, a small amount of silicone grease should be applied to them prior to installation.

Questions?

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