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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.

Parts List

1. WeatherBox Camera Enclosure (135 mm x 89 mm x 68 mm) with 35 mm diameter threaded stem.
2. 89 mm diameter threaded locking collar.
3. Hex locking nut for attachment to threaded stem of camera enclosure.
4. Octagonal 2 mm thick transparent plexiglass plate.
5. 43 mm x 5 mm rubber o-ring for mounting underneath the plexiglass plate.
6. 36 mm x 3.5 mm rubber o-ring for mounting on the flange at the top of the threaded stem.
7. (WeatherBox-CAM models only) Raspberry Pi v2 Camera Module and ribbon cable.

Required and Recommended Equipment

1. For the base WeatherBox model (without a camera included) a Raspberry Pi v2 Camera Module with ribbon cable is required.
2. Electronics enclosure with 36 mm diameter hole for housing Raspberry Pi or similar processor equipment. Desiccant for the enclosure is recommended to protect against humidity and condensation.
3. Silicone grease (ex: Trident silicone grease) is recommended for application to the rubber o-rings prior to installation.
4. Power drill with bit(s) for creating a 35 mm diameter hole in the desired electronics enclosure.

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 stem.

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.

4 mounting posts
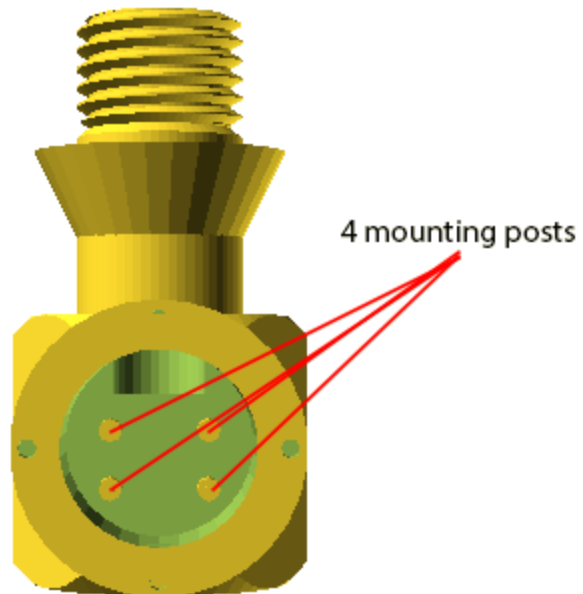
3. Place the large 43 mm diameter O-ring in the groove around the opening of the WeatherBox as shown below:
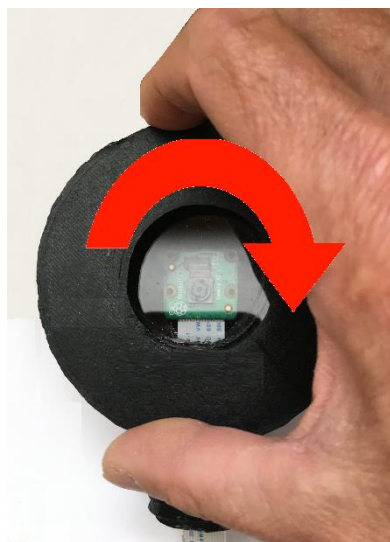
4. With the O-ring in place, place the octagonal plexiglass plate over top of it, so that it is centered over the opening:

5. Screw the 89 mm locking collar securely over the plexiglass window in the direction shown until some resistance is felt. **DO NOT OVER-TIGHTEN!**

6. Prepare the electronics housing for the Raspberry Pi or other microprocessor equipment by drilling a circular hole about 35 mm wide (it needs to be just slightly wider than the outer thread diameter on the stem of the WeatherBox). Ensure that any burrs or other irregularities are removed after drilling.

7. Slide the smaller (35 mm x 3.5 mm) O-ring over the threaded stem 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.

8. Insert the threaded stem of the WeatherBox into the hole created in step 6 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.


9. Connect the free end of the ribbon cable onto your other equipment (ex: Raspberry Pi computer board) 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 from a pencil or similar device to genly poke down the corners of the circuit board.

Replace the O-ring and plexiglass plate as in steps 3 and 4 and try taking another picture.
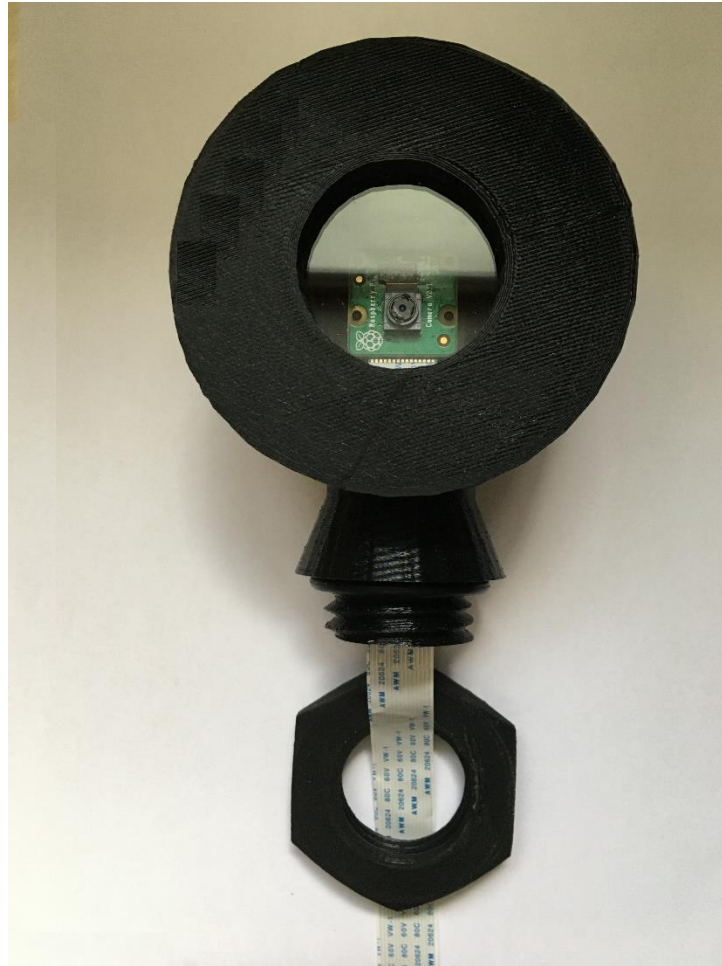
Cleaning and Maintenance

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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