

ROSR Procedure: Standard Installation

The Remote Ocean Surface Radiometer (ROSR) provides NIST-traceable sea-surface skin temperature (SSST) measurements in support of air-sea interaction studies or satellite calibration and validation activities. Its operational goals are to make observations autonomously from a ship at sea for six-months and with an accuracy of $\pm 0.1^{\circ}\text{C}$. Intercomparison studies show much better performance; typically $\pm 0.04^{\circ}\text{C}$.

This report describes the steps in a standard ROSR installation.



Figure 1: *Experiment setup. The ROSR was mounted on the bridge roof, port side, approximately 9 m above the sea surface. While underway we made visual confirmation that the viewing field of view was well outside any ship wake.*

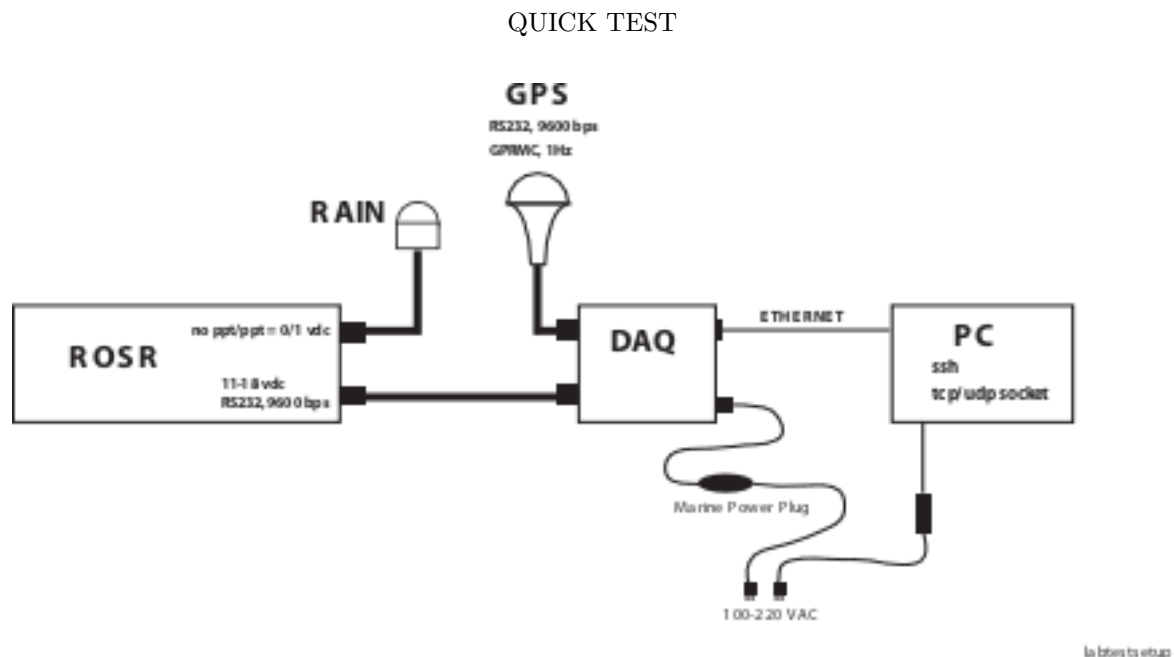
UNPACK



The system ships in three cases and, possibly, a set of tools.

Case 1	ROSR in Pelican Case model iM2950, yellow. Weight=35 Kg. LWH=795 × 518 × 310 mm.
Case 2	DAQ, sensors, and cables in Pelican Case model iM2950, yellow. Weight=26 Kg. LWH=795 × 518 × 310 mm.
Case 3	Frame in a heavy duty snowboard bag. Weight=15 Kg. 1730 × 240 dia mm.

- In a dry open area, unpack all items and review for damage. Follow the steps below
- Open box #1 and remove the ROSR. Check for external damage.
- Open box #2 and survey all components for damage. (DAQ electronic box, ethernet cable, rain sensor, GPS, power/coms cable, 3/8" hex wrench, laptop PC, PC power module)
- Remove the laptop and power module and turn on. Linux OS will boot up.
- Remove the electronic box. Open it and remove foam padding. Look for damage. Sometimes the DIN components come loose.
- IF rough shipping is suspected you might take a peak inside: Use the 3/8" hex key to carefully remove the long cylinder by unscrewing the center bolt. At some point the cylinder can slide out enough to inspect the plugs on the circuit boards. Look for other signs of damage.
Example: in one case the plug on the tilt sensor was unplugged AND all six circuit board standoffs were sheared in two. Surprisingly the electronics continued to work, albeit without tilt.
- Proceed to assemble the components to perform a system functionality test.
- Take care to save all packing material so the system can be returned.



- Study the figure above and be assured you have all components.
(ROSR, power/com cable, rain sensor, DAQ box, GPS, ethernet cable, AC power, laptop)
A shorter ethernet can be used in this test.
- Connect the system according to the diagram.
- Plug in the DAQ box and laptop to AC.
- Turn on the laptop and let Linux boot up.
- Open the DAQ box and press the small knife switch down (ON).
- Open a terminal window on the laptop; press `<control>-<alt>-t` followed by F11 for full screen. The prompt is `~/swmain/apps/ROSR/sw $`.
- If this DAQ has an iBoot power control enter `booton`.
- Confirm ethernet connectivity by `ping -c3 192.168.255.1`. If the connection is good you will see the ping times in ms. Stop here if you have no connectivity. (Note that the default IP# for the serial server, hub, is 192.168.255.1 and the IP# for the iBoot control is 192.168.255.2. Ping should work for either of these.)
- Set the PC time with the command `SetDate r0srr0sr yyyy MM dd hh mm ss` where yyyy is the year, MM is the month, dd is the day, hh is the hour, mm is the minute, and ss is the second. The year is four digits and the rest have two. Example: `SetDate r0srr0sr 2019 03 06 20 04 00`. Time is set when you press `enter`. Enter `Date` for the PC time to confirm.
- Clear old data with `Wipe y` which erases the data folder.
- `Start` data collection. Data collection is a background process.
- `Raw` shows the raw output from the ROSR. You should see data lines coming each 2 seconds.
End this display with `^c`

- **Test Rain Sensor**

Tap fingers or spit on the rain sensor and confirm that the weather shutdown occurs. The rain flap closes and LED#1 is a solid red. Use the `Raw` command and observe the last two data fields before the '*' which are the rain voltage and the secs to open. During rain these are 1.0,120*. About 2 minutes after the rain stops and the dome is dry the rain switch opens and the numbers are 0.0,tt* where tt is the secs to begin data collection. When tt counts down to zero the flap opens and sampling restarts.

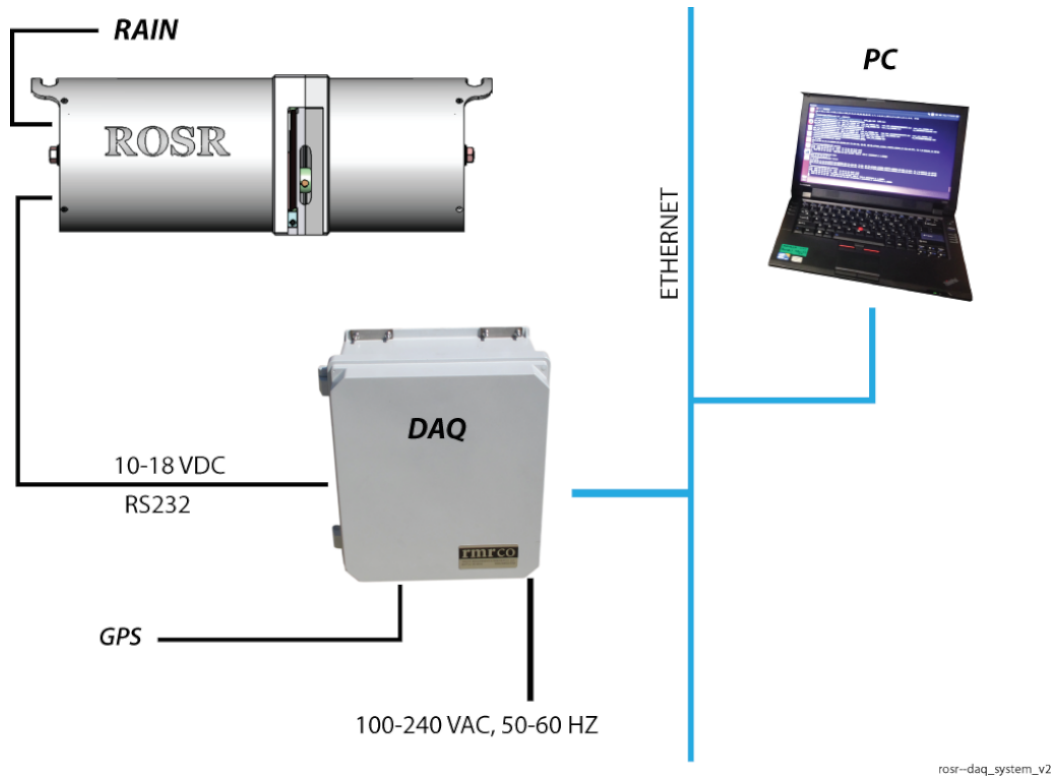
- End the test with `Stop`, `Wipe y`, and `RosrShutDown`. Disconnect the power.

ASSEMBLE THE FRAME



- Necessary tools are a ratchet drive with a long 3/8" socket, an adjustable wrench, ratchet 3/8" box end wrench, and a cordless drill with a 3/8" socket. These tools will make the assembly much easier.
- Lay out all the pieces according to the photo. Remove the plastic ties and tape.
- Lay down the two legs facing opposite that shown in the photo. Attach the top strut. Note the struts are marked 'A', 'B', etc and their location on the legs are co-labeled. It should be easy to install the four struts.
- Turn the frame over and attach the shelf brackets as shown.
- Note the two struts with bolts for the DAQ box. Double check the photo and be sure it is correctly placed. It is best to install the box

INSTALLATION



The installed connections are similar to the test above.