

Catching the Perfect SAR Waves: "Radar" System Construction



Materials:

1.



2.



3.



4.



5.



6.



7.



8.



9.



10.



**1. Sharp®
GP2Y0A02YK0F
Sensor**

**2. Four AA
battery holder
with cover &
switch**

**3. 3 AA
alkaline
batteries**

**4. 2 wire
connectors**

**5. Yellow and
black
2" shield wire**

**6. Alligator
clips**

**7. 2 #4-40 x
3/4 screws**

**8. 2 combo
hex nuts from
each screw**

**9. Precision
screw set**

**10. Wire
stripper**

1. Pre-Mark and Drill

- a. Make sure that your four AA battery holder is OFF.
- b. Open your four AA battery holder with a Phillips screwdriver.
- c. Pre-mark the holder's lid on the outside with two holes using a 9/64 dill bit about 37 mm apart. The holes should be directly above battery slot #1.
- d. Verify that your battery holder doesn't contain batteries.
- e. Identify the lower part of your four AA battery holder (not the lid).
- f. Mark and drill into the side of slot #1 of your battery holder.
 - i. Pre-mark the outside lower part of your holder in the middle.
 - ii. Drill the hole using the same bit.
- g. Mark and drill inside your holder (adjacent to the positive terminal of slot #1). This allows the holder's VCC and ground wires to enter into slot #1.
 - i. Pre-mark the edge of your holder above the VCC and ground wire opening with a 4mm diameter. Drill the hole.



1b



1e



1f

2. Sensor Stabilization

- a. Align the drilled holes on the holder's lid with the sensor earlobe holes.
- b. Run a #4-40 x 3/4 machined screw through each hole.
- c. Secure the sensor by using a hex nut on each screw inside the battery holder.



2b



2c

Caution: Your teacher must verify that all wires are making appropriate contact with indicated wires only. Use wire connectors to secure multiple wires.

3. Serial and Parallel Holder Configuration

- Insert the AA batteries into Slots 2-4 (labeled as S2-S4) correctly.
- Pop out the ground (negative) terminal in slot #1 with a flat screwdriver.
- Using the yellow shield wire, connect it around the ground terminal.
- Slide in the ground terminal into slot #1 and slide the other end of the shield wire under the positive terminal or wrap it around the terminal.
- Note: You may verify that you made a proper configuration with a multimeter.



2a



2b



2c



2d

4. Sensor Connections

- Run the ground (black) and VCC (red) wires coming out of the sensor unit through the hole on the battery holder lid (made in 1e).
- Run the exiting ground (black) and VCC (red) wires from the lower part of the battery holder back inside to slot #1 (using the hole made in 1f).
- Group the ground (black) wire from the sensor and the holder along with an **additional ground (black) wire** inside the battery holder. Connect all three wires with a wire-connector. **Run the third wire added out through the hole in lower part of your battery holder (made in 1e).**
- Group VCC wires from the sensor unit and the battery holder. Connect them using a wire connector.
- Neatly place all connected components inside slot #1 of the battery holder and close the battery holder.



3a



3c



3d



3e

5. Alligator Clips

- a. Loosen the screw on both alligator clips using a Phillips screwdriver.
- b. Insert exiting yellow and black wires into each alligator clip and wrap around beneath alligator screw head.
- c. Tighten each alligator screw.



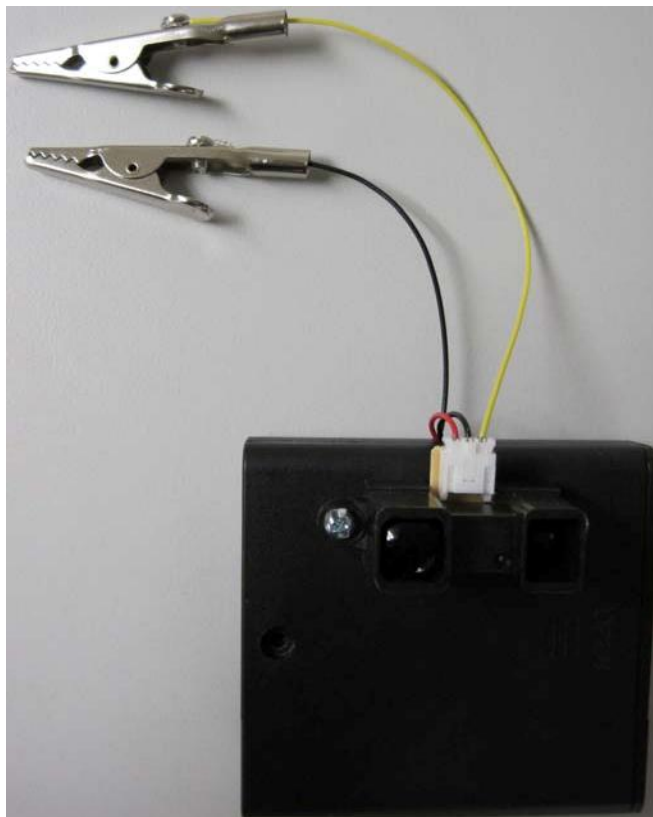
5a



5b



5b



5c