

Creating a simple temperature sensor

An introduction and instructions to build a simple underwater temperature sensor.



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Sensors

ROVs often carry sensors.

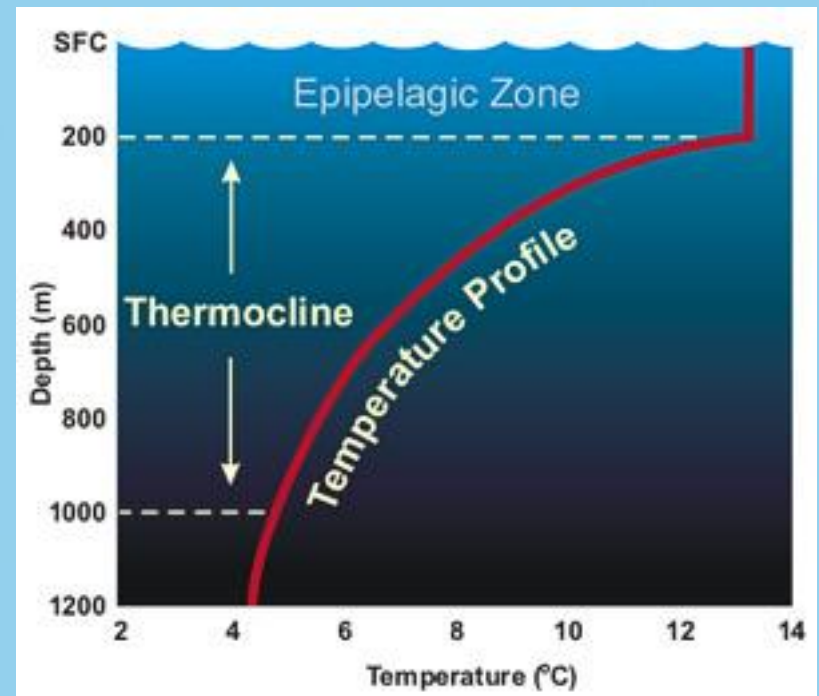
This may be for science.

This may to be complete a MATE ROV Competition task.

For 2019, MATE is asking teams to measure temperature in water.

Carrying a **glass** or **mercury** thermometer is not safe. Glass can break and mercury is toxic.

So how do we create a simple, safe temperature sensor?



RTD

- Resistance temperature detectors (RTDs) can be inexpensive.
- The wires of the RTD can be lengthened without altering the accuracy of the reading.

An RTD allows us to turn this inexpensive aquarium temperature probe with a 2 foot long cable into ...



([temperature probe under \\$5.00](#))

Extended temperature probe



A temperature sensor with extended wire length that our ROV can take underwater.

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Procedure

1. Cut the wire 10 cm from the read out.
2. Strip the black sheath to expose the two internal wires.
3. Strip each internal wire.
4. Slide shrink wrap tubing over the exposed wires.
5. Choose an appropriate length of wire (two strands) and solder the temperature probe wires to each end of the selected wire. **Make sure that wire colors match.**
6. Waterproof the connections with hot glue and shrink wrap tubing.
7. Add the sensor to your ROV and test it out!



[PRESENTATION ON SOLDERING WIRES AND WATERPROOFING CONNECTIONS](#)