

# Depth Sensors

## Overview

Depth sensors are a crucial means to receive feedback about more than just depth. By using four high-precision depth sensors, pitch and roll of the submarine can be calculated. Pitch and roll information can then be used to validate any information provided by an inertial measurement unit, and it is especially useful because depth sensors are not prone to the error induced by motors that a magnetometer is.

## Theory

Think of three of the depth sensors defining a plane in 3D space. The final depth sensor acts as a fixed point above that plane that rotates as the plane rotates. If the fixed point is off-center of the plane, then when the plane rotates 180 degrees (staying flat at all times), then roll and pitch can be determined.

## Resources

| Part                         | Count | Datasheet                 |
|------------------------------|-------|---------------------------|
| <a href="#">Depth Sensor</a> | 4     | <a href="#">Datasheet</a> |

From: <http://robosub-old.eecs.wsu.edu/wiki/> - **Palouse RoboSub Technical Documentation**

Permanent link: <http://robosub-old.eecs.wsu.edu/wiki/ee/depth-sensors/start?rev=1474582300> 

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