Inertial Measurement Unit (IMU)

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Description:

The IMU is used for measuring the AUV roll, pitch, yaw rate and depth. It also monitors the battery voltage of the AUV. A PIC16F252 microcontroller is the main computer for the IMU. IMU has a single-axis rate gyro (Analog Devices ADXRS150EB) to measure the yaw rate and a 2-Axis accelerometer (Analog Devices ADXL203) to measure the roll and the pitch. An on-board DC-DC converter (RC2951) provides a stable input voltage to these sensors. Analog signals from these sensors and from the depth sensor and the battery monitor are converted into digital form by a 16-bit A/D converter (ADS8344). IMU also has 3 spare analog inputs. IMU uses a TTL level serial port to communicate with the DIMM-PC.

Functional Diagram:

Connections:
Input: +5V DC
Output: Sensor readings in digital form over the TTL serial port
Pictures:

Figure 1 IMU Top

Figure 2 IMU Bottom