SensorNode_v1.1

Ultrasonic, Temperature and Accelerometer sensor node with Sub-1 GHz radio, battery powered

1 Features

Ultrasonic sensor (HC-SR04)

- Working Frequency: 40Hz
- Max Range: 4m
- Min Range: 2cm
- Measuring Angle: 15 degrees

Accelerometer (ST – LIS302DL)

- 3-axis
- ± 2g/± 8g dynamically selectable full-scale
- Programmable multiple interrupt generator
- Embedded high pass filter
- Embedded self test
- 10000g high shock survivability

Temperature sensor (TI TMP102)

- Resolution: 12 Bits (down to 0.0625°C)
- Temperature Accuracy Without Calibration:
  - 2.0°C (max) from –25°C to 85°C
  - 3.0°C (max) from –40°C to 125°C

2 Applications

- Water level monitoring (rivers, reservoirs, flood areas)
- Waste box and wastebasket level monitoring
- Home and Building Automation
- Industrial Monitoring

3 Description

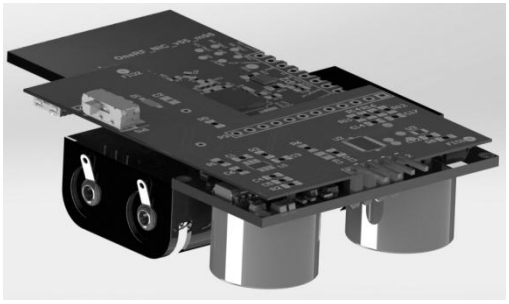
The SensorNode_v1.1 combines an ultrasonic sensor, 3-axis accelerometer, temperature sensor and a sub-1GHz wireless MCU in a single product. It is powered by 2 AAA 1.5V batteries. The ultrasonic sensor requires a 5V supply rail which is generate from the main 3V supply by a buck-boost charge pump, thus eliminating the need of dual supply input. It is meant to operate in a closed box with openings for the ultrasonic sensor only; it features a reset button and a status LED, all configurations and communications must use the radio. For development purposes there is a programming connector to flash the MCU.

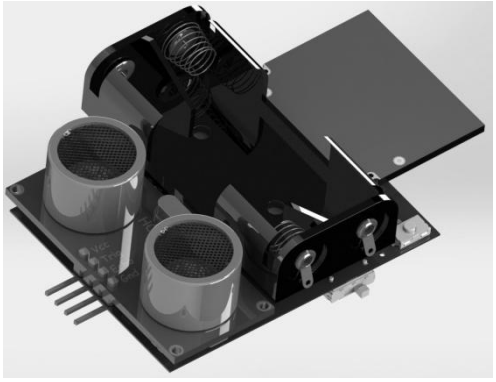
4 Reference

[1] REG710xx Buck-Boost Charge Pump with up to 60-mA Output Current, http://www.ti.com/lit/ds/symlink/reg710-33.pdf

[2] CC1310 SimpleLink™ Ultra-Low-Power Sub-1 GHz Wireless MCU, http://www.ti.com/lit/ds/symlink/cc1310.pdf

[3] LIS302DL MEMS motion sensor 3-axis - ± 2g/± 8g smart digital output “piccolo” accelerometer, http://www.st.com/resource/en/datasheet/lis302dl.pdf





SensorNode_v1.1 Schematics