RuuviTag
Technical Specifications
April 2023

RuuviTag is an open source sensor platform that measures temperature, air humidity, air pressure and acceleration. With the Ruuvi firmware application, Ruuvi sensors continuously broadcast sensor data at 0,8 Hz and simultaneously log environmental sensor data at a 5 minute interval for 10 days. Sensors are refreshed by default at 0,4 Hz. This means that 2 consecutive broadcast messages have the same sensor data. In most uses, battery lifetime is normally 1-2 years. Read more information about Ruuvi sensors and all their possibilities at ruuvi.com and more documentation at docs.ruuvi.com.

Technical Specifications

- 2,4 GHz radio
  - **Nordic Semiconductor nRF52832**
  - ARM® Cortex™-M4F CPU
  - 512 kB Flash Memory + 64 kB RAM
  - +4 dBm transmission power
  - Bluetooth Low Energy
  - Wirepas Connectivity (optional for B2B)
  - Mira OS (optional for B2B)
  - Quuppa (optional for B2B)
  - Fruitymesh (optional GPL / B2B dual licensing)
  - Other proprietary protocols are supported
  - For other specifications, see nordicsemi.com
- Accelerometer
  - **STMicroelectronics LIS2DH12**
  - 3-axis, ±2 g / ±4 g / ±8 g / ±16 g @ 1...5300 Hz
  - Freefall and motion detection
  - For other specifications, see st.com
- Temperature and humidity (RuuviTag & RuuviTag Pro models that can measure humidity)
  - **Sensirion SHTC3**
  - Operating range
    - -40...125 °C, 0...95 % relative humidity (non-condensing only!)
  - Relative humidity
    - Typical absolute accuracy tolerance ±2 % (20...80 % relative humidity, 25 °C, including hysteresis)
  - Temperature
    - Typical absolute accuracy ±0,2 °C @ 5...60 °C
    - Output resolution 0,01 °C
  - For other specifications, see sensirion.com
- Temperature (RuuviTag Pro only)
  - **Texas Instruments TMP117**

    - Operating range
        - –55…150 °C
    - Absolute maximum temperature error:
        - – ±0,1 °C (–20…50 °C)
        - – ±0,15 °C (–40…70 °C)
        - – ±0,2 °C (–40…100 °C)
        - – ±0,25 °C (–55…125 °C)
        - – ±0,3 °C (–55…150 °C)
        - Output resolution: 0,0078°C
    - For other specifications, see ti.com
- Pressure
    - **Infineon DPS310**
    - Operating range 300…1200 hPa (limited to 500…1155 hPa on Ruuvi firmware)
    - Accuracy:
        - Typical absolute accuracy: ±1 hPa (or ±8 m)
        - Relative accuracy: ±0,06 hPa (or ±0.5 m)
        - Output resolution: ±0,002 hPa (or ±0.02 m) in high precision mode.
    - For other specifications, see infineon.com
- NFC™-A tag coil
    - Reading distance up to 5 cm (depending on the reader, 1 cm normally)
- Battery
    - 1000 mAh Li/MnO2 CR2477 (RuuviTag)
    - 1000 mAh Li/MnO2 CR2477T (RuuviTag Pro)
    - User-replaceable
    - Up to 10 years theoretical battery life (depending on the software used)
    - Real-world runtime estimation is 1-2 years with the Ruuvi standard firmware that broadcasts at 0,8 Hz @ +4 dBm and samples at 0,4 Hz. For more power consumption metrics, see docs.ruuvi.com
    - High and low temperatures can impact a battery lifetime
- Expansion port (RuuviTag Pro only)
    - Ruuvi Connector expansion port is a standardized 8-pin FPC-cable connection compatible with all supported Ruuvi products
    - For other specifications, see github.com/ruuvi/connector
- Absolute maximum operating temperature
    - -40…85 °C (electronics and enclosure)
    - -40…85 °C (included Ruuvi CR2477T battery)
    - -20…70 °C (included Ruuvi CR2477 battery)
- Button
    - 1 button (not accessible without opening the enclosure)
- Indicator lights
    - 2 LEDs (not visible outside the enclosure)
- Diameter
    - 45 mm (circuit board)
    - 52 mm max (RuuviTag enclosure)
    - 78,3 mm max (RuuviTag Pro enclosure)
- Height

    - 12,5 mm (RuuviTag enclosure)
    - 15 mm (RuuviTag Pro enclosure)
- Weight
    - 25 g total (RuuviTag, enclosure and battery included)
    - 38 g total (RuuviTag Pro, enclosure and battery included)
- Distance between the mounting screws
    - 66,3 mm (RuuviTag Pro only)
- Enclosure
    - IP67 (RuuviTag)
    - IP67 (RuuviTag Pro with the breathing hole)
    - IP68 and IP69K (RuuviTag Pro without the breathing hole)
    - High-quality & long-lasting polycarbonate
        - Wonderlite® PC-110, FDA 21 approved material, flame rating V-2
    - Gore IP67 certified vent membrane
    - Lubricated industrial grade NBR o-ring

Notes: Sensor accuracy information is based on sensor manufacturers' datasheets and information received from the sensor manufacturers. It's not always guaranteed that typical or absolute sensor accuracies will be met in user applications. The sensor manufacturers state that the majority of the sensors do fall between the typical values informed on the datasheets. However, some sensor components delivered from the sensor manufacturers' facilities may still have up to three times worse accuracy. Sensors are factory-calibrated before being assembled. Those sensors that are used by the firmware software are tested but not individually calibrated at Ruuvi's production line. Operating temperature may have an effect on battery life. Estimates are at room temperature (25 °C). Ruuvi products are designed for non-condensing use only.