

## TENTASense User Guide

### Assembly and Setup

1. Connect the red microcontroller (Figure 1) to the green or yellow sensor board (Figure 2).

**NB: Do not insert the microcontroller with batteries connected.**

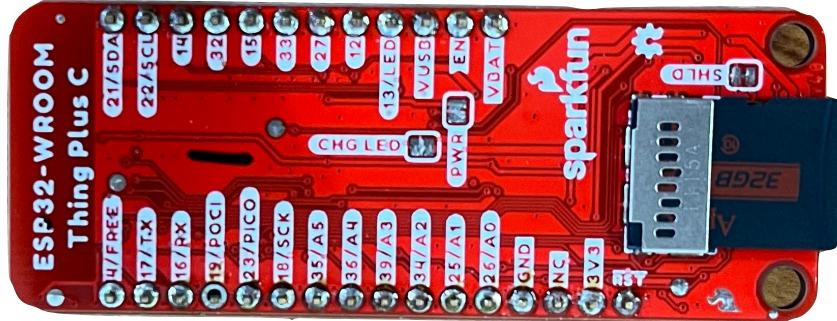


Figure 1: Microcontroller



Figure 2: Sensor board

2. Once the microcontroller is connected, insert 2 × AA batteries into the battery compartment on the sensor board.
3. Connect to the TENTASense using a bluetooth serial app: nRF Connect (Figure 3) works well, and is available for [Windows](#), [iOS](#) and [Android](#). Look for the TENTASense-XX device, where XX is a number between 01 and 24 that matches the number written on the back of the microcontroller.

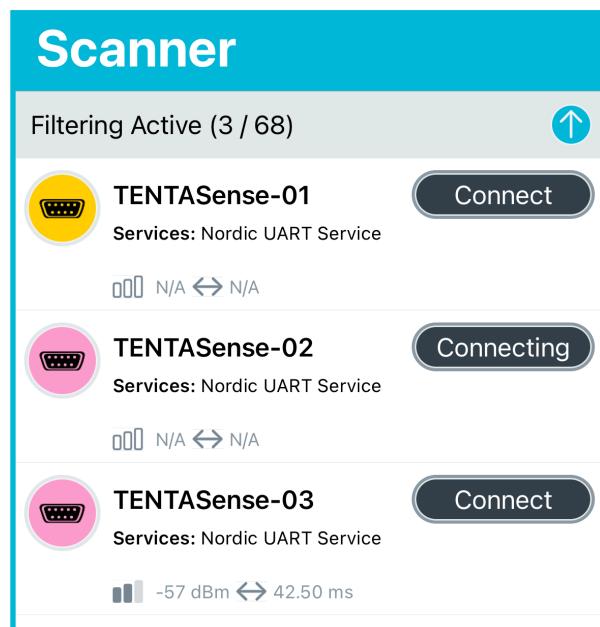


Figure 3: nRF Connect scanner screen.

3. a. Once connected, you may need to enable logging of messages sent by the TENTASense module in nRF Connect. Select the Client screen and tap/click the down arrow under UART TX Characteristic (Figure 4).
3. b. Next, select the Log screen to see messages from the TENTASense (Figure 5).

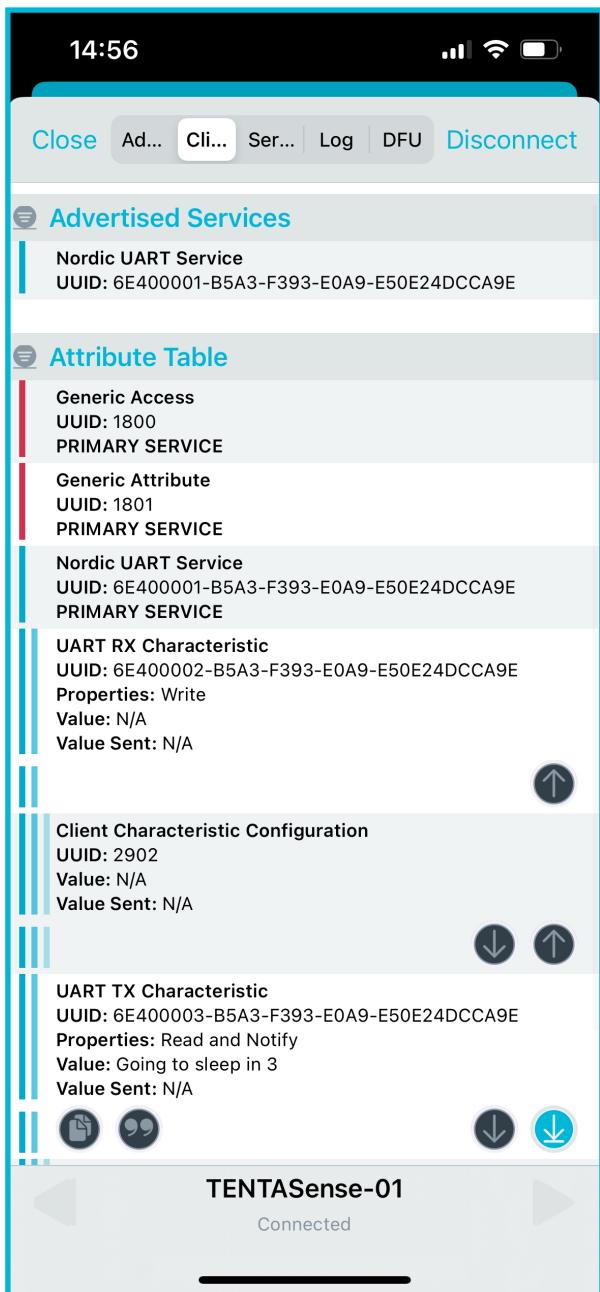


Figure 4: nRF Connect client screen, with UART TX Characteristic logging button shown in blue.

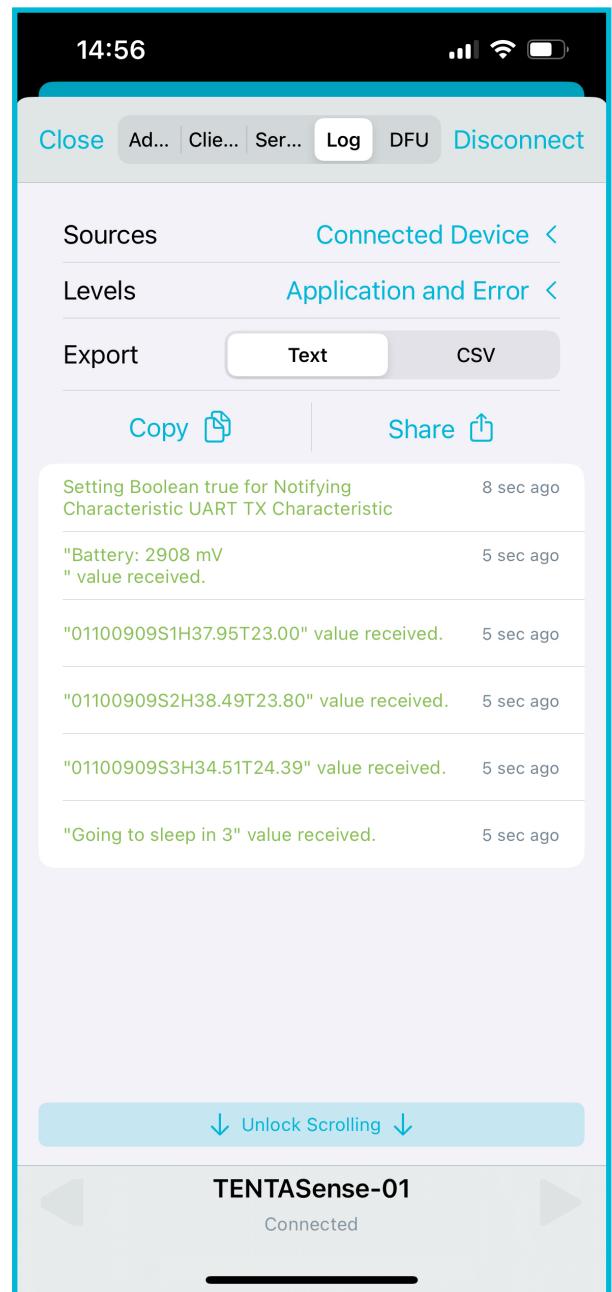


Figure 5: nRF Connect log screen, showing messages sent by the TENTASense.

4. At start up, TENTASense will report battery level and three sensor readings every 10 seconds via bluetooth. During this time, use the buttons on the green sensor board to adjust the time and date on the microcontroller. Changes to the time and date will be reported via bluetooth and will be logged to the SD card on the microcontroller.

The format of the humidity and temperature messages is as follows:

**{DD}{MM}{HH}{mm}S{X}H{Hval}T{TVal}**

and carries the following meaning:

{DD}	Date day
{MM}	Date month
{HH}	Time hour
{mm}	Time minute
{X}	Sensor number (1-3). Sensor 1 is furthest from the microcontroller, Sensor 3 is closest.
{Hval}	Relative humidity percentage.
{TVal}	Temperature in °C.

5. After five readings the TENTASense will log battery and sensor readings to the SD card and go into sleep mode.

#### Normal Operation

1. The TENTASense will log a reading (battery level, timestamp, temperature and humidity from all three sensors) to the SD card once every 60 minutes.
2. Push the Min/Wake button on the sensor board at any time to wake the TENTASense and connect via bluetooth. This will allow you to check battery level and get an immediate set of temperature and humidity readings.
3. After reporting five readings 30 seconds apart via Bluetooth, the TENTASense will log battery and sensor readings to the SD card and go into sleep mode. This will also reset the time to the next logged measurement to 60 minutes from the time the TENTASense goes to sleep.

#### Battery Life

1. Two fresh AA batteries should be able to run the TENTASense for > 30 days.
2. Consider replacing batteries if battery voltage falls below 2500 mV.