SNSL User Guide

1. Collector

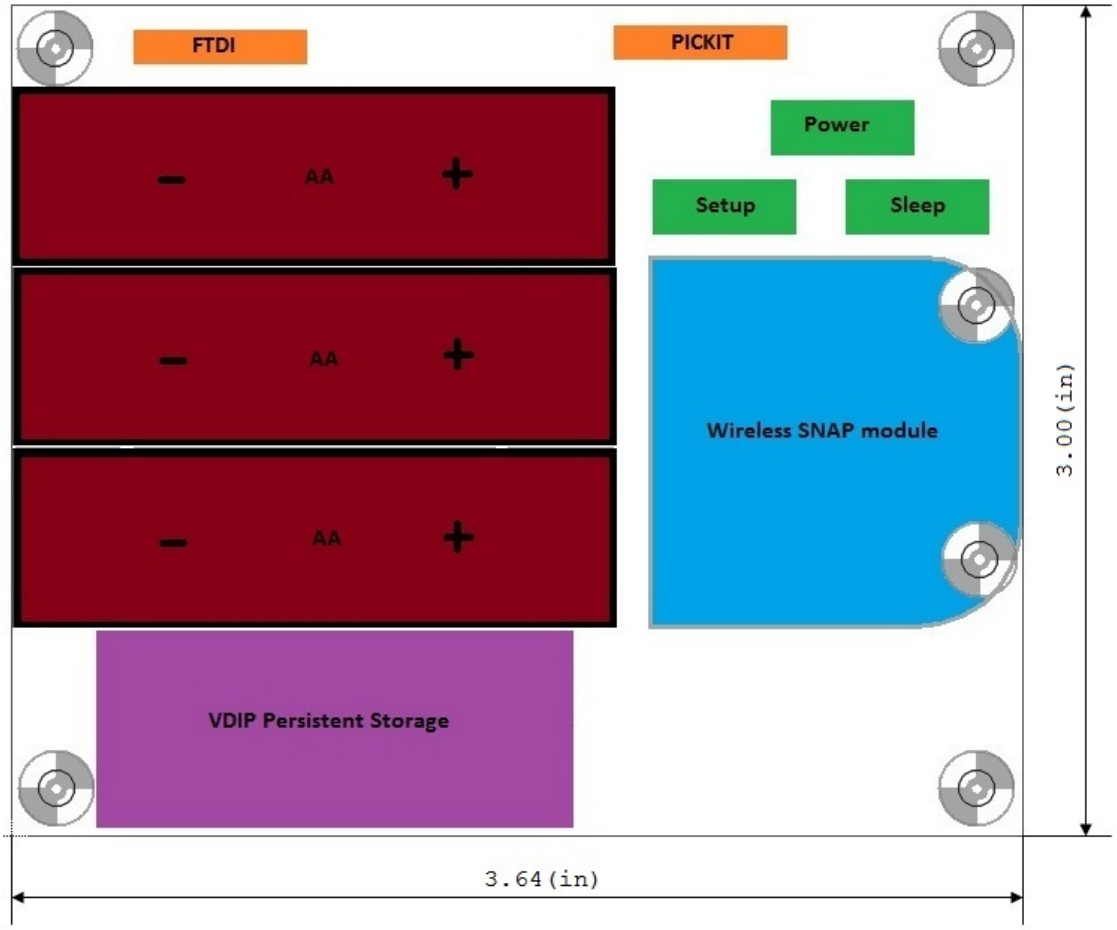

Figure 1.1: Collector Node Layout

a. Initial Setup
   i. Flash Drive Setup
      1. Plug the flash drive into a computer
      2. Make sure the drive is formatted to FAT32
      3. Create a file named “NODES.txt”
      4. Take the node addresses off the Wireless Synapse Module for each sensor node in the network (as seen in Figure 1.2) and enter them into “NODES.txt” on separate lines (as seen in Figure 1.3)
      5. Plug the flash drive into the collector node

Figure 1.2

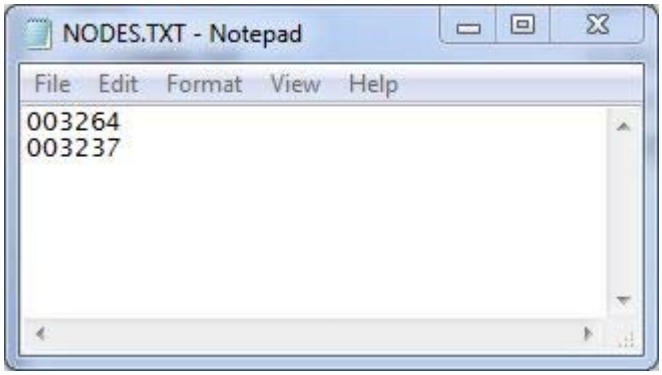

Figure 1.3

ii.Configuration Settings

1. Connecting To The Interface
    a. Open Bully Bootloader and ensure the correct COM Port is selected.
    b. Ensure 19200 is the selected baud rate. See Figure 1.3, below.
    c. Check 'OpenCom.' See Figure 1.3, below.
    d. Switch the Power Switch on the PCB ON.

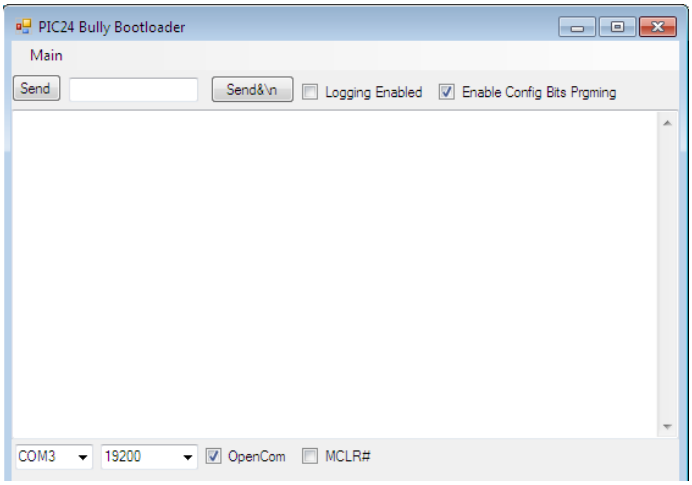

Figure 1.3

2. Configure Clock (Menu Option 1)
    a. Follow on screen instructions for when to enter year, month,etc
3. Network Settings (Menu Options 2-5)
    a. Number of Network Hops (Option 2)
        i. This option is the number of sensor nodes between the collector and the furthest node that is deployed. The default for this is 4 hops. If you are not sure what the correct number of hops is, use the default.
        ii. To set this, follow the on screen instructions.
    b. Timeout Per Hop (Option 3)
        i. This option is the time delay to for communications to arrive at each network hop in the system. The default for this is 300ms per hop (value from Menu Option 2).
        ii. To set this, follow the on screen instructions.

c. Node Failure Limit (Option 4)
    i. This is the number of times that a sensor node can fail to respond to a polling request before it will be ignored. The default for this is 16.
    ii. To set this, follow the on screen instructions.
d. Reset Node Ignore List (Option 5)
    i. This is the only method of resetting the ignored nodes list. This option will clear the entire list of all ignored nodes. There is no value that is set with this option.
    ii. Follow the on screen instructions to clear the list.

4. Exiting the Configuration Menu (Menu Option 6)
    a. Follow on screen instructions to exit the configuration menu and return to the normal operation mode.

b. Adding Sensor Nodes

    This can be done during any time the network is asleep. DO NOT remove the flash drive while the network is awake.

    i. Plug the flash drive into a computer
    ii. Open “NODES.txt”
    iii. Add the nodes addresses from any new sensor nodes that you wish to add to the network into “NODES.txt” on separate lines. (See Figures 1.2 and 1.3 for more information)
    iv. Plug the flash drive back into the collector node

c. Retrieving data
    i. Plug the flash drive into a computer
    ii. Copy data files to desired location or import into Excel (see Excel Tutorial in Section 3)
    iii. Plug the flash drive back into the collector node

2. Sensors

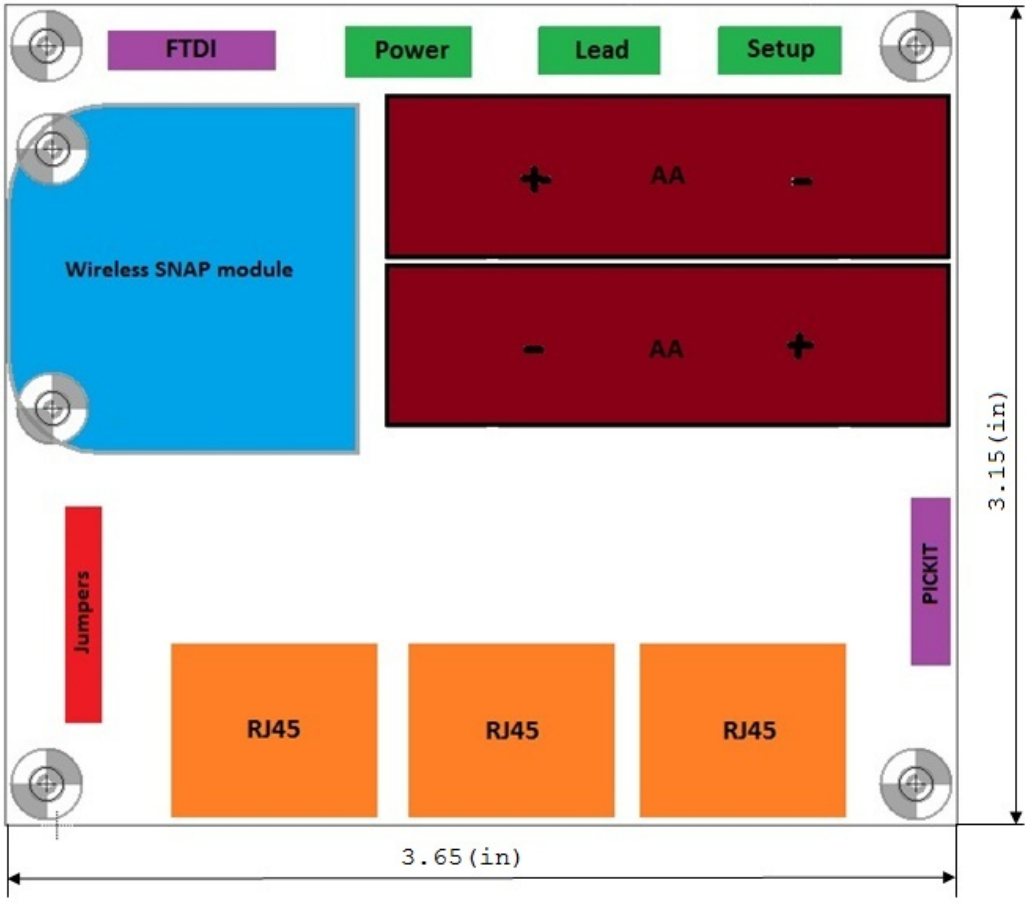

Figure 2.2: Sensor Node Layout

a. Initial setup
    i. Connecting To The Interface
        1. Open Bully Bootloader and ensure the correct COM Port is selected.
        2. Ensure 19200 is the selected baud rate. (See Figure 1.3 for more information)
        3. Check 'OpenCom.' (See Figure 1.3 for more information)
        4. Switch the Power Switch on the PCB ON.
    ii. Configure Clock (Menu Option 1)
        1. Follow on screen instructions for when to enter year, month,etc
    iii. Set Node Name(Menu Option 2)
        1. Follow on screen instructions to set the node name
        2. Make sure to follow the restrictions detailed in the instructions

b. Connecting probes

    ****This information will change with the new sensor layout****

    Two RJ45 connections are located on the bottom of the Soil Testing Data Logger. The RJ45 connections are labeled either "Soil" or "Temp". The Soil and Temperature RJ45 pinout configurations are shown in Figure 2.2 below:

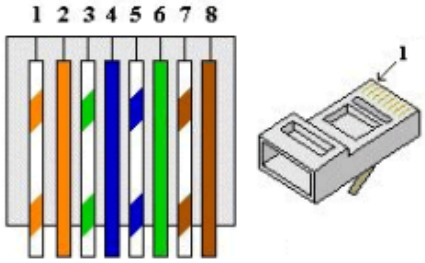

Figure 2.2: RJ45 Connector

Soil RJ45 Pinout:
1. Soil Probe 1
2. Soil Probe 2
3. Soil Probe 3
4. Soil Probe 4
5. NC
6. NC
7. NC
8. GND

Temperature RJ45 Pinout:
1. Temperature Input 1
2. Temperature Input 2
3. Temperature Input 3
4. Temperature Input 4
5. Temperature Input 5
6. NC
7. +3V
8. GND

(**NOTE**: The Temperature RJ45 cable has a strip of white electrical tape on it.)

3. Excel Tutorial

The data in the text file created can easily be exported to Excel using the steps below.

1. Open a blank workbook.
2. Click the 'Data' tab.
3. Select 'From Text.'
4. Browse to data.txt.
5. Check 'Delimited' and click next.
6. Check 'Commas', Uncheck 'Tabs', and click next.
7. Click 'Finish.'

The data will be formatted in the following order:

Table 1.1

Date	Time	1.250	Battery	SP-1	SP-2	SP-3	SP-4	Tl-1	Tl-2	Tl-3	Tl-4	Tl-5	Node

The soil probe measurements are in millivolts and the temperature indicator measurements are in degrees Celsius.