# Using BlueNor EV BC832 Evaluation Boards

Introduction

EV BC832 V2 has the same footprint as that of Arduino UNO R3. It is not an UNO R3 compatible board. Many UNO R3 shields can be used with EV BC832.

- It is preloaded with firmware for evaluating Bluetooth mesh stacks.
- Firmware can be developed for other applications. You need Nordic nRF52 development tools. An nRF52 DK is recommended for programming.
- If not used on board, all GPIO pins are available at connectors. Whenever possible, with firmware configuration, pin function can be compatible with that of Arduino UNO R3.

Hardware Description

EV-BC832 V2 schematics can be downloaded from http://www.fanstel.com/download-document/. Descriptions of hardware are the followings.
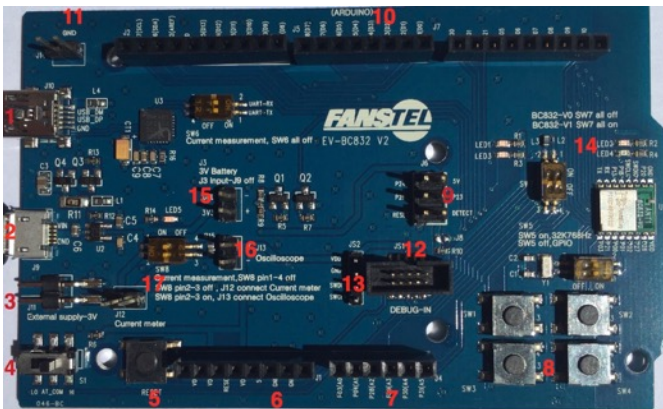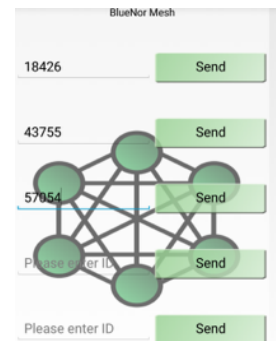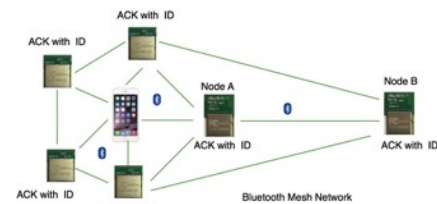

1. J10, mini USB connector. The first DC power input and USB connection. Portable smartphone charger with auto powering down feature can be used. It has circuitry to generate periodic load to prevent auto powering down of some portable smartphone chargers.
2. J9, micro USB connector. The second DC power input.
3. J11, up to 3.6V DC input to module directly, no voltage regulator on board..
4. Set S1 to High for AT command mode, to Low for Data mode. AT command firmware is required, not preloaded.
5. Reset button
6. J1. Power, ground and reset connection to Arduino UNO R3 shields or Fanstel shields.
7. J4 GPIO pins
8. 4 buttons for testing
9. J6. For use with shields
10. J2, J5, J7. Connectors for GPIO pins
11. J14. Ground connection
12. JS1. 10-pin debug-in connection to Nordic nRF52 DK.
13. JS2. 4-pin SWD connector

14. 4 LEDs
15. J3. 3V battery input
16. J13. use an oscilloscope for current measurement across an 10-ohm resistor..
17. J12 for power consumption measurement. Set SW8 pin 2/3 to OFF, set SW6 to all OFF to disconnect UART pins, and connect a current meter.

Testing Mesh Stacks

Up to 65536 nodes are supported in a mesh network. Each node can be addressed and controlled by the controller, a smart phone in this demo.

1. Search for and download *BlueNor Mesh* from Google Play or Apple APP store.
2. Powering up only one evaluation board to find 5-digit ID for the node.
3. Open *BlueNor Mesh* and touch **Scan**.
4. Write down the 5-digit node ID number. In this example, **57054**.
5. Touch to select the BLE device, in this example **rbc_mesh #57054**.
6. Powering up all nodes. They are connected automatically.
7. Enter the node ID number **57054** and press **Send**.
8. When node **57054** receives this command, it toggles LED indicator ON/OFF, and sends an ACK message to the smartphone.
9. When smartphone receives the ACK message, it displays the node ID number and ACK sequence number. In this example, **57054ack4** is the 4th ACK message received from node **57054**.

Bluetooth Range with a Smartphone

To measure Bluetooth line of sight range with a smartphone

1. Follow **Procedures to Send Message in Mesh Network**.
2. Test for the maximum range to receive ACK message from the node.
3. Measuring Bluetooth range between 2 EV BC832 is not recommended using this method. Range with a smartphone is longer than range between 2 EV BC832.

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