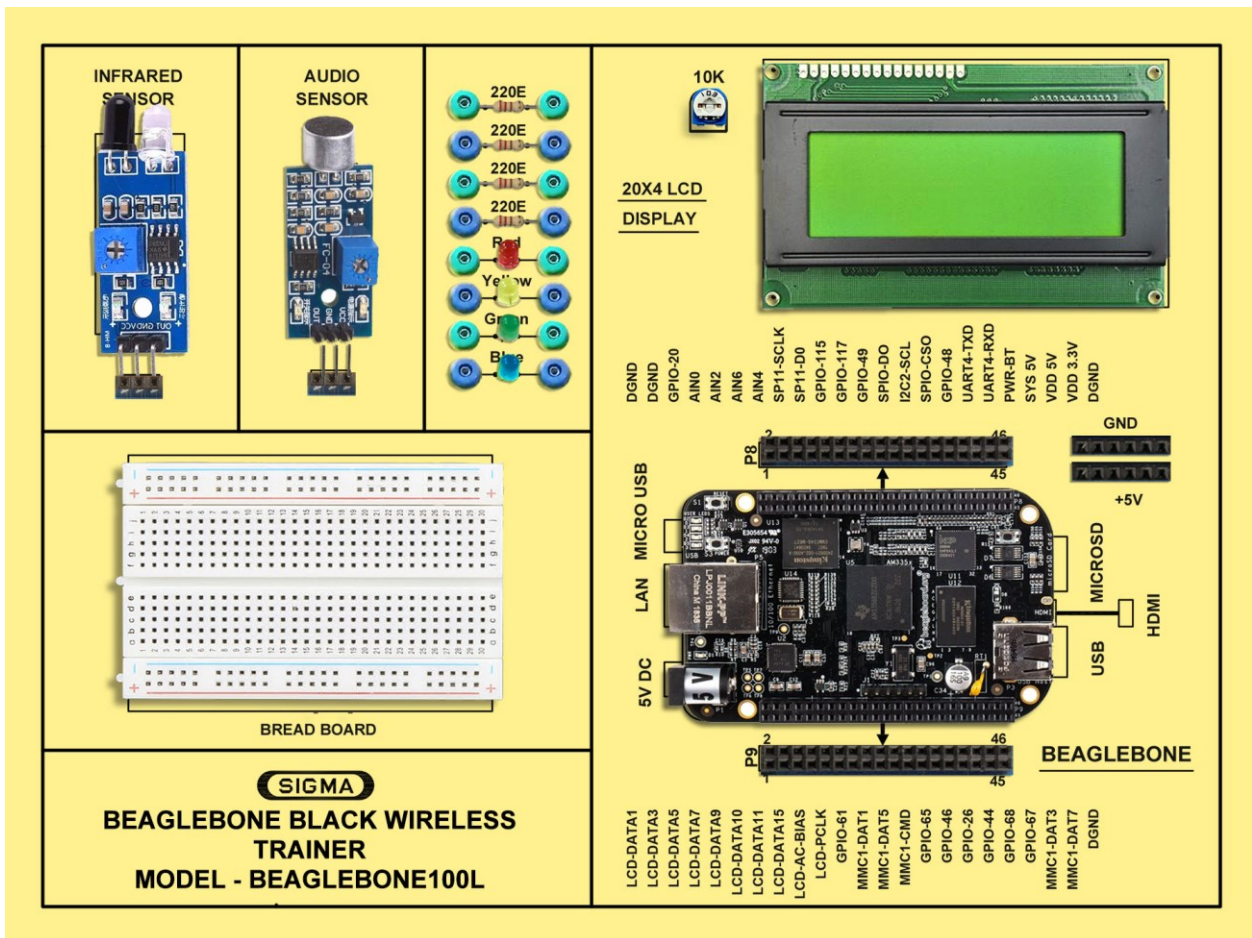




## BEAGLEBONE BLACK WIRELESS MICROCONTROLLER TRAINER MODEL - BEAGLEBONEWLS100

This trainer has been designed with a view to provide practical and experimental knowledge of Internet of Things (IOT) with BeagleBone Black Wireless Microcontroller.



## **SPECIFICATIONS**

### **1. Hardware**

**Following Parts and Modules are assembled on Single PCB of size – 12"x9"**

#### **1. BeagleBone Black Wireless Board**

1. Microprocessor : Octavo Systems OSD3358 1GHz ARM® Cortex-A8
2. SDRAM Memory : 512MB DDR3 RAM
3. Onboard 4GB 8-bit eMMC on-board flash storage
4. 3D graphics accelerator
5. NEON floating-point accelerator
6. 2x PRU 32-bit microcontrollers
7. USB client for power & communications
8. USB host
9. Ethernet 10/100, RJ45 : 802.11b/g/n
10. Bluetooth 4.1 plus BLE
11. Wifi : 2.4GHz WiFi
12. HDMI Mini
13. 2x 46 pin headers
14. Power Source miniUSB, USB or DC jack - 5V DC External Via Expansion Header

#### **2. Sensors:**

1. Infrared Obstacle Sensor
2. Audio Sensor

#### **3. Modules and Hardware:**

1. 20 X 4 - LCD Display
2. LEDs and Different Resistors
3. Breadboard - 400 Points for testing different Sensors and circuits

## 2. Accessories

- |     |   |                         |
|-----|---|-------------------------|
| 1.  | Memory Card   | : 32 GB SD Card         |
| 2.  | USB Cable   | : 2 No                  |
| 3.  | Ethernet Cable  | : 1 No                  |
| 4.  | HDMI to Mini HDMI Connector Cable                                       | : 1 No                  |
| 5.  | Power Supply Adaptor  | : +5V DC, 2A            |
| 6.  | Jumper wires -2 mm  | : 50 Nos.               |
| 7.  | Pen Drive with Software, Library, Driver,<br>Codes, Soft Copy of Manual | : 16 GB                 |
| 8.  | Printed Practical Manual  | : 1 No.                 |
| 9.  | E-Books for IOT Subject   | : 10 Nos. in PDF Format |
| 10. | Mp4 Video Class for IOT Subject   | : 40 Nos                |
| 11. | Excitation accessories for each sensor                                  |                         |

## 3. Cabinet and PCB

The complete circuit diagram is screen printed on component side of the PCB with circuit and Parts at the same place. The PCB with components on front side is fitted in elegant wooden box having lock and key arrangement. The acrylic cover is fitted on PCB to safeguard parts. It works on 230 V AC Supply.

## **EXPERIMENTS**

### **A. Theory Experiments of BeagleBone Wireless Micro controller**

1. To understand theory and working of BeagleBone Wireless Micro controller.
2. To understand Operating system of BeagleBone Wireless Micro controller.
3. To understand 20 x 4 LCD Display Interface.
4. To understand Communication Protocols-UART,I2C,SPI,and RS485
5. To understand USB Interface for BeagleBone Wireless Micro controller.
6. To understand Ethernet Cable Interface for BeagleBone Wireless Micro controller
7. To understand microSD Card Interface for BeagleBone Wireless Micro controller

### **B. Practical Experiments**

1. Creating a Wi-Fi digital radio using BBB wireless
2. Biometric Door Opener with Facial Recognition & Voice Output using BBB wireless
3. Health Monitor board using BBB wireless & WiFi
4. Color sorter machine implementation using BBB wireless
5. Implementing MotorCape, and Linear Actuator using BBB wireless
6. Controlling Dynamixel AX-12A, U2D2 servos remotely using BBB wireless
7. Implementing MaxBotix Rangefinder to detect object collision using BBB wireless
8. Implementing Fractal Imagery using BBB wireless