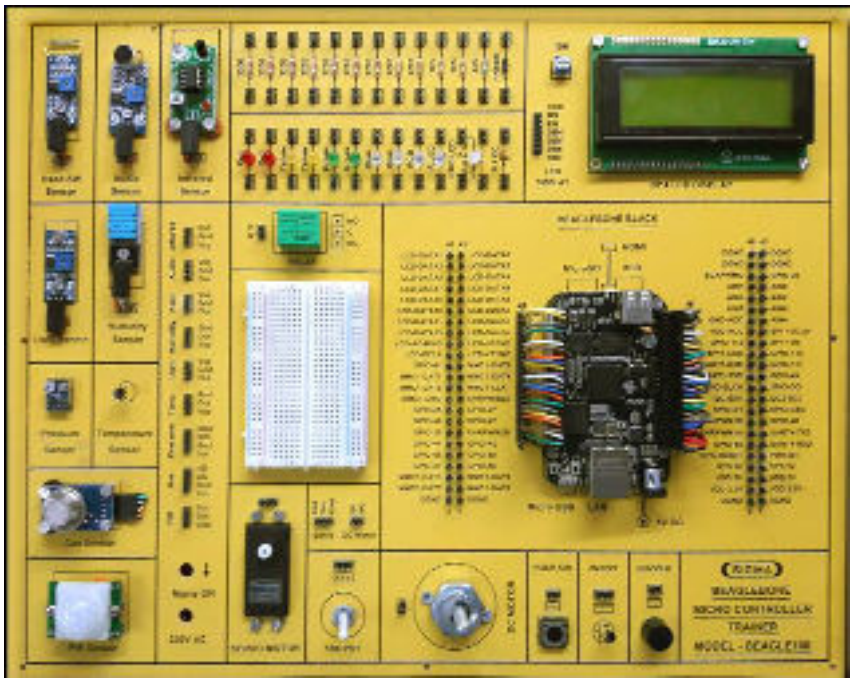
BEAGLEBONE MICRO CONTROLLER TRAINER

MODEL-BEAGLEBONE100

SPECIFICATIONS



This trainer has been designed with a view to provide practical and experimental knowledge of Internet of Things (IOT) with Sensors programing with BeagleBone Board.

SPECIFICATIONS

A. Main Specs

1. Following Parts and Modules are assembled on Single PCB of size - 18 Inch x 15 Inch.
2. The complete circuit diagram is screen printed on component side of the PCB with circuit and Parts at the same place.
3. The PCB with components on front side is fitted in elegant wooden box having lock and key arrangement.
4. Modules and Parts should be removable without desodlering for easy repair / replacement
5. The acrylic cover is fitted on PCB to safeguard main parts.

B. BeagleBone Microcontroller Board – Rev C

1. CPU: Texas Instruments Sitara AM5729 (featuring Dual Arm® Cortex®-A15 microprocessor subsystem running at 1.5GHz,
2. Dual C66 DSP, Four ARM Cortex-M4,
3. Four Programmable Real-time Units (PRUs)
4. Four Embedded Vision Engine
5. 4x Embedded Vision Engines (EVEs))
6. RAM: 1GB RAM
7. Storage: 16GB onboard eMMC flash with high-speed interface
8. USB: USB Type-C for power and superspeed dual-role controller; and USB type-A host
9. Connectivity: Gigabit Ethernet, 2.4/5GHz WiFi, and Bluetooth
10. Display: micro HDMI
11. Software: Debian GNU/Linux
12. Additional USB-A host port
13. Headers compatible with many BeagleBone® Cape add-on boards
14. Zero-download out-of-box software experience

C. Sensors & Other Components

1. 20 X 4 LCD Display
2. Reed SW Sensor
3. Audio Sensor
4. IR Sensor
5. Light Sensor
6. DHT11Sensor
7. Pressure Sensor - BMP180
8. Temperature sensor - LM35
9. Gas Sensor
10. PIR Sensor
11. Audio Buzzer
12. DC Motor with Driver PCB
13. Servo Motor
14. Seven Segment Display
15. 1 Channel Relay Board
16. Transistor -2N2222
17. Red LED
18. Green LED
19. Yellow LED
20. IR LED
21. RGB LED
22. Capacitor-0.1 DC
23. 220E,10K,33K Resistor
24. Diode-1N4007
25. Micro Push Switches - Square
26. 10K Preset
27. 10k POT– Horizontal
28. DC Motor Fan Scale
29. USB Cable for Beagle bone
30. BeagleBone Power Supply 5V 2A
31. Breadboard
32. Ethernet cable
33. Female to Female Cable – 30 Nos.

D. Accessories

1.	USB Cable	: 1 No
2.	Ethernet Cable	: 1 No
3.	Micro USB to USB cable for ESP32	: 1 No
4.	Power Supply Adaptor	: +9V DC, 1A
5.	Jumper wires	: 50 Nos.
6.	Pen Derive with Software, Library, Driver, Codes, Soft Copy of Manual and Mobile App	: 16 GB
7.	Printed Practical Manual	: 1 No.
8.	E-Books for Agriculture IOT Subject	: 10 Nos. in PDF Format
9.	Mp4 Video Class for IOT Subject	: 40 Nos

EXPERIMENTS

A. Theory Experiments

1. To understand theory and working of BeagleBone Micro controller.
2. To understand Operating system of BeagleBone 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 Micro controller.
6. To understand Ethernet Cable Interface for BeagleBone Micro controller
7. To understand microSD Card Interface for BeagleBone Micro controller
8. Reed SW Sensor
9. Audio Sensor
10. Infrared Sensor
11. Ambient Light Sensor - LDR Light Sensor
12. Humidity-DHT11 Sensor
13. Pressure Sensor- BMP180
14. Temperature Sensor-LM35 Sensor
15. Air Quality Sensor - Gas Sensor - M Q 135
16. PIR Sensor
17. To understand Active Audio Buzzer Interface
18. To understand 1 Channel Relay Board
19. To understand fundamental of DC Motor and its driver Interface
20. To understand fundamental of Servo Motor
21. How to add . py file in memory card.

B. Practical Experiments

22. To make LED blink.
23. To demonstrate Push Button functionally by toggling LED.
24. To control basic LED using 1 Channel Relay Board.
25. To use Audio Buzzer for output signal alarm.
26. To carry out Traffic signal control.
27. To carry out Lift elevator control.
28. To detect magnet using Reed SW Sensor.
29. To detect Sound using Audio Sensor.
30. To transmit and receive signals using Infrared Sensor.
31. To measure Light using LDR Light Sensor.
32. To measure Humidity using DHT11 Sensor.
33. To measure Pressure using Pressure-BMP180 Sensor.
34. To measure Temperature using LM35 Sensor.
35. To measure Air Quality using Gas Sensor - Smoke Sensor.
36. To detect motion using PIR Sensor.
37. To operate DC Motor control
38. To operate Servo Motor control
39. To send Sensors data to Website Cloud page using Wifi and Internet
40. To send Sensors data to MySQL Cloud Server and store them
41. To send Sensors data to Local Host Server and Store them on website html page
42. To send Sensors data to Mobile using GSM Gateway by SMS
43. To send Sensors data to Mobile using Android Mobile App
44. To send and display Sensors Data on website Smart Dashboard on a server

Contact us

Registered Office

SIGMA TRAINERS AND KITS
E-113, Jai Ambe Nagar,
Near Udgam School,
Drive-in Road,
Thaltej,
AHMEDABAD-380054. INDIA.

Factory

SIGMA TRAINERS AND KITS
B-6, Hindola Complex,
Below Nishan Medical Store,
Lad Society Road,
Near Vastrapur Lake,
AHMEDABAD-380015. INDIA.

Contact Person

Prof. D R Luhar – Director
Mobile : 9824001168
Whatsapp : 9824001168

Phones:

Office : +91-79-26852427
Factory : +91-79-26767512
+91-79-26767648
+91-79-26767649

E-Mails :

sales@sigmatrainers.com
drluhar@gmail.com