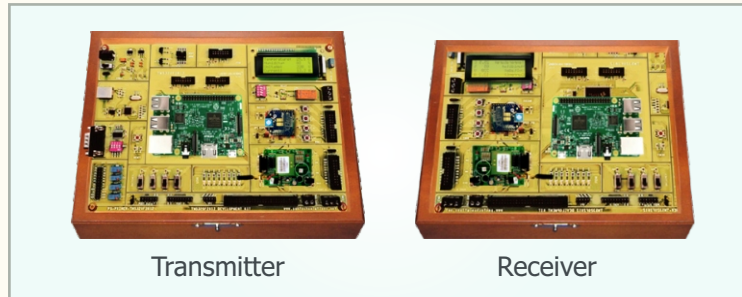# RASPBERRY MULTI NETWORK WSN TRAINER
MODEL - RASBRWSN100

SIGMA

This trainer has been designed with a view to provide theoretical & practical knowledge of Wireless Sensor Network Trainer using Raspberry-Pi controller board.

Transmitter   Receiver

This trainer is used to send and receive sensor data by different wireless communication methods – like Bluetooth, Wifi, Zigbee, RF, GSM and GPS using Raspberry Microcontroller.

SPECIFICATIONS

1. Hardware

    1. Raspberry-Pi Controller Board : 2 Nos.
    2. ZigBee Wireless : 2 Nos.
    3. Bluetooth Wireless : 2 Nos.
    4. Wi-Fi Wireless : 2 Nos.
    5. RF Wireless : 2 Nos.
    6. GPS Wireless : 2 Nos.
    7. GSM Wireless : 2 Nos.
    8. Breadboard : 1 No.
    9. Display 20 * 4 LCD : 1 No.
    10. Servo Motor : 1 No.
    11. Stepper Motor : 1 No.
    12. Onboard Push Switch, Buzzer, Seven Segment Display, Potentiometer, Speaker, 12V Relay and Different types of Resistors and LEDs

2. **Wireless Sensors**

    1. Temperature Sensor : 1 Nos.
    2. Audio Sensor - Condenser Mike : 1 Nos.
    3. Humidity Sensor : 1 Nos.
    4. PIR Sensor : 1 Nos.
    5. Light - IL luminance Sensor : 1 Nos.

3. Software

1.	Controller Software CD	:	2 Nos.
2.	Controller Operating System CD	:	1 No.
3.	Applications Codes CD	:	1 No.

4. Accessories

1.	USB Cables	:	2 Nos.
2.	Connecting Wires / Jumpers	:	30 Nos.
3.	Practical Manual	:	1 No.
4.	SIM Card with GPRS is to be provided by you	:	1 No.
4.	E-Books for WSN using Raspberry Pi	:	10 Nos. in PDF Format
5.	Mp4 Video Class for WSN using Raspberry Pi	:	40 Nos.

5. Trainer Board

The complete circuit diagram should be is screen printed on component side of the PCB with circuit and Parts at the same place. The true value of component is printed on component side. 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 has holes for alignment and repair. The testing points are provided with 1.25" tags to connect CRO probe.

6. Printed Manuals with softcopy on Pen Drive is to be supplied.

7. Online manual and Library for Raspberry, Charts, PPT, and Software is to be provided.

8. Note

Two Computer systems (Pentium IV 1.5GHz, 160GB HD, 1GB RAM) with One Serial Port and One USB are required to operate this trainer.

EXPERIMENTS

1. To Study Theory and Block Diagram of Wireless Sensor Network
2. To Study Node Controller Boards
3. To Study different type of Sensors and their Output characteristics
4. To install and Connect different Sensors to Node Controller Boards
5. To install and Configure Raspberry-Pi Node Controller Boards
6. To install and Configure ZigBee Wireless Transmitter Nodes
7. To install and Configure Wifi Wireless Transmitter Nodes
8. To install and Configure Bluetooth Wireless Transmitter Nodes
9. To install and Configure GSM Wireless Transmitter Nodes
10. To install and Configure GPS Wireless Transmitter Nodes
11. To write a Program in C++ for programming of different types Nodes and Router
12. To Start HyperTerminal and send and receive Sensors Data readings to Base Station
13. To understand different types of Protocols and Commands
14. To study Sensor controlling and Monitoring Software
15. To control Sensors using the PC Monitoring software
16. To Study and Configure different types of Topologies
17. To Cross over from Mesh Network to Internet Network
18. To make different Applications and Projects using Wireless Sensor Network
19. To demonstrate and understand different types of faults
20. To Transmit Sensor data with ZigBee and Raspberry-Pi
21. To Receive data with ZigBee and WSN Gateway
22. To Transmit Sensor data with Bluetooth and Raspberry-Pi
23. To Receive data with Bluetooth and WSN Gateway
24. To Transmit Sensor data with Wifi and Raspberry-Pi
25. To Receive data with Wii and WSN Gateway
26. To Transmit Sensor data with GPS and Raspberry-Pi
27. To Receive data with GPS and WSN Gateway
28. To Transmit Sensor data with GSM and Raspberry-Pi
29. To Receive data with GSM and WSN Gateway