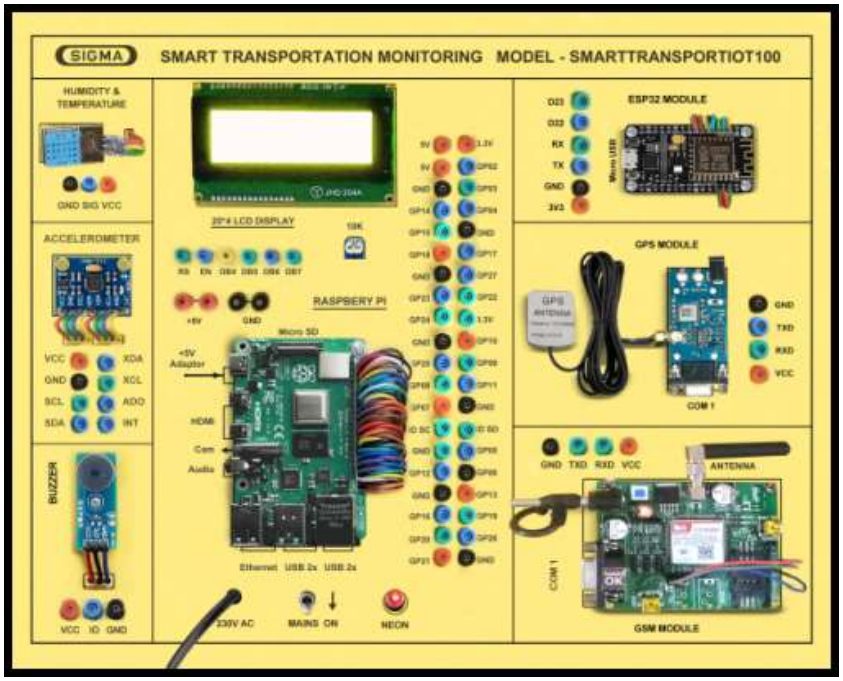
SMART TRANSPORTATION MONITORING SYSTEM

MODEL-SMARTTRANSPORTIOT100

SPECIFICATIONS



This trainer has been designed with a view to provide practical and experimental knowledge of Sensors programing for Smart Transportation Monitoring System with Raspberry IOT 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. Raspberry Microcontroller Board – Pi-4

1. Processor : 64bit, ARMv7
2. RAM - 1 GB
3. Memory - 32GB
4. OS: Open Source Linux
5. Connectivity:
   Dual-Band 2.4/5.0 GHz Wireless LAN
   Bluetooth 5.0
   USB Interface – USB 2.0 – 2 Ports, USB 3.0 – 2 Ports,
   Gigabit Ethernet
6. Video and Sound
   2 × micro HDMI Interface ports (up to 4Kp60 supported)
   4-pole stereo audio and composite video port Output
7. Power - 5V, 3A DC via USB-C Connector

C. Sensors:

1. Temperature and Humidity Sensor – DHT11
2. Accelerometer Meter
3. GPS Speed Tracker with Input Supply : 12V DC
4. Audio Buzzer

D. Modules and Hardware:

1. 20 X 4 - LCD Display
2. GSM Modem Module : Quad-Band 850/900/1800/1900MHz
3. GPS Module : GPS Frequency 1575.45 MHZ
4. ESP32 Wifi Module
5. 2 mm interconnection Sockets ESP32 Wifi Module

E. Application Software

1. Software Front End: Zend Framework: 1.12.1(php)
2. Back End: mySQL
3. OS: Windows and Linux Compatible

F. Accessories

1. Memory card : 16 GB SD Card
2. USB Cable : 2 No
3. Micro USB to USB cable for ESP32 : 1 No
4. Ethernet Cable : 1 No
5. Power Supply Adaptor : 5V, 3A DC via USB-C Connector
6. Jumper wires : 30 Nos.
7. Software and Driver CD : 1 No.
8. Practical Manual - Printed + Soft Copy : 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

EXPERIMENTS

A. Theory Experiments for Raspberry PI 4

1. To understand theory and working of Raspberry
2. To understand Operating System for Raspberry
3. To understand Communication Protocols - UART, I2C, SPI, RS232 and RS485.
4. To understand USB Interface for Raspberry PI
5. To understand Ethernet Cable Interface for Raspberry PI
6. To understand micro SD Card Interface for Raspberry PI
7. To understand that how to connect 20 x 4 LCD Display to Raspberry PI

B. Theory of ESP32, GSM and GPS Wireless Module

8. To understand theory and working of ESP32
9. To understand Operating System for ESP32
10. To understand Pin and Connection Diagram of ESP32
11. To understand USB Interface for ESP32
12. To understand theory and working of GSM
13. To understand theory and working of GPS

C. Theory Experiments for Sensors

14. To understand theory of Temperature and Humidity Sensor DHT11
15. To understand theory of Accelerometer Meter
16. To understand theory of GPS Speed Tracker

D. Practical Experiments

17. To measure Air Temperature and Humidity using sensor DHT11
18. To determine Speed of vehicle using GPS Tracker Sensor
19. To determine the change in speed of vehicle using Accelerometer Sensor

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