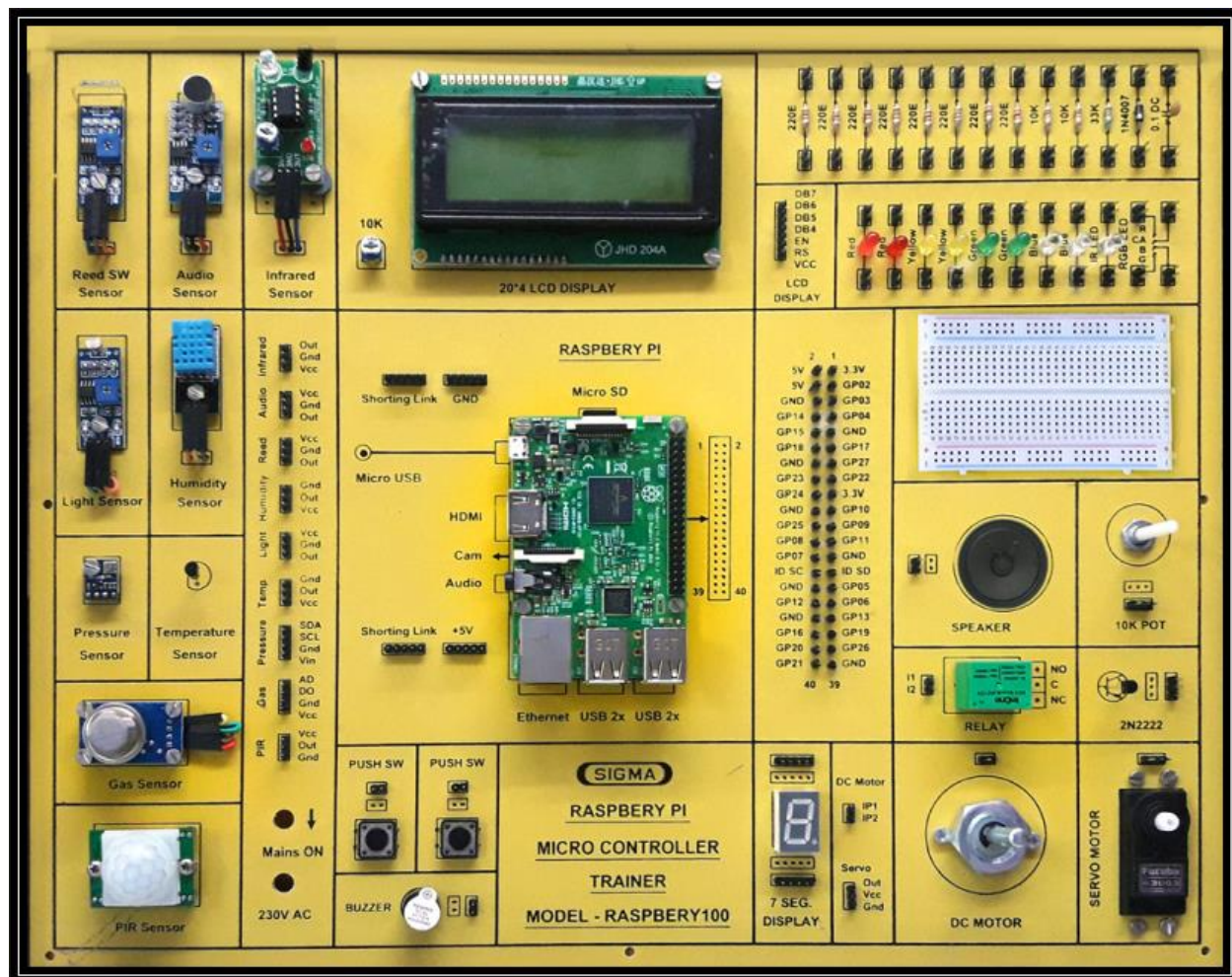




RASPBERRY MICRO CONTROLLER TRAINER

MODEL-RASPBERRY100

SPECIFICATIONS



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

SPECIFICATIONS

Following Parts and Modules are assembled on Single PCB of size - 18 Inch x 15 Inch

1. Raspberry Microcontroller Board – Pi

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, Gigabit Ethernet
USB Interface – USB 2.0 – 2 Ports, USB 3.0 – 2 Ports,
6. Video and Sound
2 × micro HDMI Interface ports (up to 4Kp60 supported)
7. Power - 5V, 3A DC via USB-C Connector
8. On Board 32 GB SD Memory Card with all Codes and Libraries

2. Sensors:

1. Ambient Light Sensor - LDR Light Sensor
2. Humidity - DHT11 Sensor
3. Pressure – BMP180 Sensor
4. Temperature - LM 35 Sensor
5. Gas Sensor - M Q 135
6. PIR Sensor
7. Audio Sensor
8. Infrared Sensor
9. Reed Switch – Magnetic Sensor

3. Modules and Hardware:

1. 20 X 4 - LCD Display
2. Different Resistors
3. Different Color LEDs
4. Red, Green, Yellow LED
5. 10K Pot
6. Push Switch – 2 Nos
7. Audio Buzzer Board
8. Breadboard - 400 Points
9. 7 Segment Display
10. 1 Channel Relay board
11. DC Motor with Motor Driver board
12. Stepper Motor with Motor Driver board
13. 2 mm interconnection Sockets

Accessories

- | | |
|--|-------------------------|
| 1. USB to MicroUSB Cable | : 1 No |
| 2. Ethernet Cable RJ45 | : 1 No |
| 3. HDMI to Micro HDMI Cable | : 1 No |
| 4. VGA 15 pin Male to HDMI Converter | : 1 No |
| 5. 2 mm Banana Jack Jumper – Connectors | : 30 Nos |
| 6. 5V, 2A Micro USB Power Adaptor | : 1 No |
| 7. Pen Drive - 16 GB with All Codes | : 1 No |
| 8. Printed Manual | : 1 No |
| 9. Softcopy of Manual – On Pen Drive | : 1 No |
| 10. E-Books for IOT Subject – On Pen Drive | : 10 Nos. in PDF Format |
| 11. Mp4 Video for IOT Subject – On Pen Drive | : 40 Nos |
| 12. Online Cloud/Server Services for 2 years on Our Sigma Server | |

Cabinet and PCB

The complete circuit diagram is screen printed on component side of the PCB of size 15 inc x 12 inch 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 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
8. To understand theory of I2C Channel

D. Theory Experiments for Sensors

9. To understand theory of Air Ambient Light Sensor - LDR Light Sensor
10. To understand theory of Air Humidity - DHT11 Sensor
11. To understand theory of Air Pressure – BMP180 Sensor
12. To understand theory of Air Temperature - LM 35 Sensor
13. To understand theory of Air Gas Sensor - MQ135
14. To understand theory of Air PIR Sensor
15. To understand theory of Air Audio Sensor
16. To understand theory of Air Infrared Sensor
17. To understand theory of Air Reed Switch – Magnetic Sensor
18. To understand Active Audio Buzzer.
19. To understand 1 Channel Relay Board.
20. To understand fundamental of DC motor and its driver
21. To understand fundamental of Stepper motor
22. How to add .py file in Memory card

E. Practical Experiments

23. To connect LCD Display
24. To make LED blink
25. To transmit and receive signals using Infrared Sensor
26. To detect Sound using Audio Sensor
27. To detect magnet using Reed Switch Sensor
28. To measure Humidity using Humidity - DHT11 Sensor
29. To detect Light using LDR Light Sensor
30. To measure Temperature using Temperature - LM 35 Sensor
31. To measure Pressure using Pressure – BMP180 Sensor
32. To detect Gas using Gas Sensor
33. To detect motion using PIR Sensor
34. To use Audio buzzer for Output signal Alarm
35. To control 1 Channel Relay
36. To operate DC Motor control
37. To operate Servo Motor

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