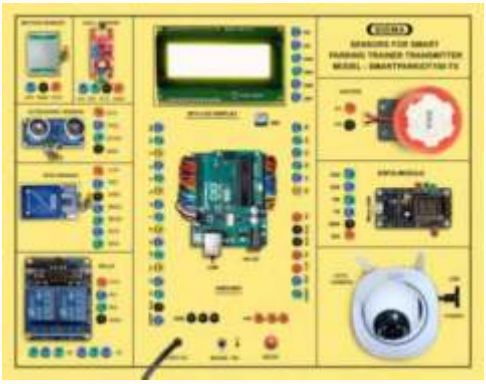
SENSORS FOR SMART PARKING
MODEL-SMARTPARKIOT100

This trainer has been designed with a view to provide practical and experimental knowledge Sensors programing for Smart Parking with Arduino IOT Board.



SPECIFICATIONS

1. Hardware

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

1. Arduino Microcontroller Board

1. Arduino Uno Microcontroller board based on the ATMEGA328P
2. 14 Digital Input / Output pins (of which 6 provide PWM output)
3. 16 MHz Ceramic Resonator
4. USB Port
5. Power Jack – 9V DC, 1A

2. Sensors & Other Components

1. CCTV IP Camera
2. PIR Motion Sensor
3. RFID Reader/Writer Sensor
4. 2 Channel Relays
5. Hooter
6. Magnetic Hall Sensor
7. Ultrasonic Sensor

3. Modules and Hardware:

1. 20 X 4 - LCD Display
2. ESP32 Wifi Module
3. 2 mm interconnection Sockets

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Dealer:-

4. Application Software

1. Smart Dashboard for remote monitoring and analysis

2. Accessories

1.	USB Cable	: 2 No
2.	Micro USB to USB cable for ESP32	: 1 No
3.	Ethernet Cable	: 1 No
4.	RFID Keychain	: 1 No.
5.	RFID RC522 Cards	: 2 Nos.
6.	Power Supply Adaptor	: +9V DC, 1A
7.	Jumper wires	: 50 Nos.
8.	Pen Derive with Software, Library, Driver, Codes, Soft Copy of Manual and Mobile App	: 16 GB
9.	Printed Practical Manual	: 1 No.
10.	E-Books for IOT Subject	: 10 Nos. in PDF Format
11.	Mp4 Video Class for IOT Subject	: 40 Nos
12.	Excitation accessories for each sensor Magnet for the Hall 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 for Arduino Board

1. To understand theory and working of Arduino Operating software.
2. To understand Pin and Connection Diagram of Arduino.
3. To understand USB Interface for Arduino.
4. To understand 20 x 4 LCD Display.

B. Theory of ESP32 Wireless Module

5. To understand theory and working of ESP32
6. To understand Operating System for ESP32
7. To understand Pin and Connection Diagram of ESP32
8. To understand USB Interface for ESP32

C. Theory Experiments for Sensors

9. To understand theory of CCTV IP Camera
10. To understand theory of PIR Motion Sensor
11. To understand theory of RFID Sensor
12. To understand theory of 4 Channel Relays
13. To understand theory of Hooter
14. To understand theory of Magnetic Hall Sensor
15. To understand theory of Ultrasonic Sensor

D. Practical Experiments

16. To Stream live video using CCTV Camera in Mobile app
17. To detect motion using PIR Motion Sensor
18. To read and write RFID cards using RFID Reader/Writer
19. To control HOOTER using Relays
20. To determine Magnetic Field using Magnetic Hall Sensor
21. To measure object distance using Ultrasonic Sensor

E. Server, Cloud Configuration, IOT Gateway, Nodes and Mobile App Experiments

22. To send Sensors data using Wifi Wireless Node to Main Base IOT Receiver
23. To send and display Sensors Data in a server Web Page using HTTP, Java and PHP Code
24. To send Sensors data to website webpage and store them into MySQL Server
25. To receive and show Sensors data on Android based Mobile App
26. To send and display Sensors Data on website Smart Dashboard on a server