Order Code - 52072D
IOT Development Board

## General Description

**52072D** Experimental Set Up has been designed specifically for begineers to learn IOT and apply it in embedded applications. The board contains the necessary components and sensors that covers the basic as well as advanced areas of embedded system. All the practical can be implemented using Arduino Programming Language which is an open source project with codes & library available on github.
Practical experience on this set up carries great educative value for Science and Engineering Students

## Experiments

01. Blinking of the ESP32 in Build LED.
02. Inbuild Hall sensor in ESP32.
03. The use of Dual Core of ESP32.
04. Blinking of LED light using the ESP32 Wroom.
05. Controlling LED with Push Button using the ESP32.
06. To Develop Program For Controlling LED Arrays.
07. Establishes a Two Way Serial Bluetooth Communication Between Two Devices
08. Turn on Single LED from Your Phone using the Bluetooth.
09. Control the Array of LED by Mobile Phone using the Bluetooth.
10. Sensing the Temperature by Interfacing LM35 Temperature Sensor using the Bluetooth Module with Mobile.
11. To Interfacing 20*4 LCD with ESP32 Board.
12. To Interfacing OLED with ESP32.
13. OLED Image Display.
14. To Develop Program For Sensing Environment Humidity By Interfacing Humidity Sensor DHT11 With OLED.
15. To Develop Program For Interfacing 7 Segment Display.
16. To Develop Program For Generating Tone Using Buzzer.
17. ADC using the ESP32.
18. To Develop Program For Designing Real Time Clock Using DS1307 IC.
19. To Develop Program to Control DC Motor with ESP32.
20. To Develop Program For Interfacing 4x4 Keypad Matrix with ESP32.
21. To Develop Program For Measuring Distance By Interfacing Ultrasonic Sensor HC- SR04 With ESP32.
22. To Develop Program for Interfacing LDR With ESP32.
23. To Develop Program For Interfacing IR Sensor.
24. Moving Object Detection Detection Using the ESP32 with PIR Sensor.
25. SD Card Module Interfacing Using the ESP32.
26. To Develop Program for Sensing Smoke & Its Level By Interfacing Smoke Sensor MQ-135 with ESP32.
27. ESP32 web servers.
28. Controlling LED Brightness with the Slider on ESP32 Web Server.
29. Temperature and Humidity using ESP32 web Server.
30. Control outputs with Momentry Switch(Work as Push)

Note: Specifications are subject to change.

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31. OTA (Over The Air Programming).
32. Email Alert Based on Temperature Threshold
33. Different waveform generation using ESP32 on CRO.
34. Telegram control outputs (LED Control).
35. Telegram Detect Motion Using PIR.
36. Telegram Group Controller Using ESP32
37. Web Serial Communication using the ESP32
38. Firebase Realtime Database
39. Telegram Sensor Reading. (Optional)

## Features

The board consists of the following:

01 ESP32 Board with USB port for up loading programming and data communication.
02 Alpha Numeric LCD module for Displaying Output Values.
03 Seven segment display module 4 digit for displaying output values.
04 OLED display for displaying output values.
05 MAX232 IC (serial port) with DB9 Connector for communication.
06 Real Time Clock IC used DS1307.
07 SD Card Module for Storage Data.
08 1K pot for variation
09 +5V & +3.3V D.C. at 100mA, IC regulated power supply internally connected.
10 BREAD BOARD One Terminal Strips with 640 tie points and 2 Distribution Strips with 100 tie points each, totaling to 840 tie points. For further expension.
11 Dual DC motor interface using IC L293D Dual H-Bridge Motor Driver with two 5V DC motor.
12 Buzzer for indicating output or to generate tone.
13 8 push switches interface for controlling LED or to use it as an input unit.
14 8 LED interface for indicating output.
15 Humidity Sensor DHT11.
16 Ultrasonic Sensor HC-SR04.
17 Gas/Smoke/Alcohol Sensor MQ-135.
18 Temperature Sensor LM35.
19 PIR Sensor
20 IR Sensor
21 LDR.
22 Keypad Matrix 4x4.
23 Weight : 3.0 Kg. (Approx.)
24 Dimension : W 415 x H 165 x D315

## Accessories

01 CD with programs and software
02 Mains Lead.
03 RS-232 Cable.
04 Operating Instruction Manual.
05 Data Cable

## Other Apparatus

01 Cathode Ray Oscilloscope 20MHz (CRO).
02 PC System with Windows 7, 8, 8.1 or 10 with 32 or 64 bit Operating System.

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