



IOT

DEVELOPMENT

BOARDS 52072 Series

Arduino-Mega | Arduino-UNO | ESP-32 | Raspberry PI

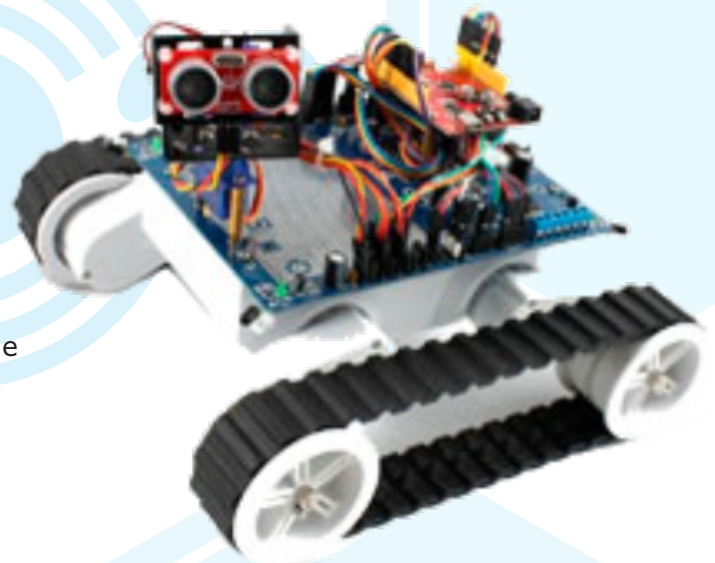
Features

The Kit includes everything you need to get started with the internet of things, including an Arduino Boards. Alphanumeric Display and Matrix Keypad, sensors and actuators. The Arduino starter kit is perfect for anyone (kids, adults or the elderly) who loves technology and wants a new geeky challenge or to get start building their own personal internet of things. You'll learn through building several creative projects. Start the basic electronics, do more complex projects, the kit will help you control the physical world with sensors and actuators This is a great kit for you to learn about Arduino and apply many smart home devices. Apart from a components list, we also provide details about the Device bit Platform including operation instructions, and 14 experiments to apply these components and learn about the related modules. Detailed materials such as module description, principle explanation and related code are provided in Manuals.

We want to use the Internet of Things to transform the way students learn about our world. Our learning materials have been designed to get educators using our kits to teach a broad swathe of subjects across Key Stages. Our current focus is getting feedback on how this new technology can help support the new computing curriculum.

Experiments List

- Experiment 1** How to Use GYROSCOPE sensor Module
- Experiment 2** How to Use IR sensor Module
- Experiment 3** How to Use PIR sensor Module
- Experiment 4** How to Use REMOTE sensors
- Experiment 5** How to Use Natural Gas Sensor
- Experiment 6** How to Use HUMIDITY Sensor
- Experiment 7** How to Use Temperature Sensor
- Experiment 8** How to Use GSM MODEM Module
- Experiment 9** How to Use RFID TX and RX 315MHz Module
- Experiment 10** How to Use XBEE Module
- Experiment 11** How to Use Voice Recognition Module
- Experiment 12** How to Use Ultrasonic Sensor Module
- Experiment 13** How to Use Magnetic compass Sensor
- Experiment 14** How to Use Camera Module



Package Include

- 1 x ADXL335 Gyroscope Module
- 1 x Voice Recognition Sensor
- 2 x IR Sensor Module
- 1 x PIR Sensor Module
- 1 x Humidity and Temperature Sensor
- 1 x RGB Module
- 1 x Relay Module
- 1 x 10K Potentiometer
- 1 x Passive Buzzer
- 1 x Natural Gas sensor Module
- 1 x Ultrasonic sensor Module
- 1 x RFID TX and RX Module
- 1 x Xbee Module
- 1 x GSM SIM900 Module
- 1 x 4x4 Matrix Keypad
- 1 x 20x4 LCD
- 1 x Arduino Module
- 1 x Robot Module
- 1 x Camera Module
- 1 x Magnetic Compass Module



Note: Specifications are subject to change.



Arduino Development Board

Order Code - 52072A

52072A Experimental Set Up has been designed specifically for beginners to learn Arduino 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

To develop Arduino program for

01. Blinking of LED.
 - Controlling LED arrays.
02. Controlling LED using Push button.
03. Interfacing 20x4 LCD.
04. Interfacing 7 segment display.
05. Generating tone using buzzer.
06. Designing Real time Clock using DS1307 IC.
07. Control DC motor.
08. Interfacing 4x4 keypad matrix.
09. Sensing environment humidity by interfacing humidity sensor DHT11.
10. Measuring distance by interfacing ultrasonic sensor HC-SR04.
11. Sensing smoke & its level by interfacing Smoke sensor MQ-135.
12. Sensing temperature by interfacing Lm35 temperature sensor.
13. Interfacing LDR.

Features

The board consists of the following:

01. +5V & +3.3V D.C. at 100mA, IC regulated power supply internally connected.
02. Arduino UNO Board with USB port for uploading programming and data communication.
03. 20x4 LCD for displaying output values.
04. 4 digit seven segment display for displaying output values.
05. 8 push buttons for controlling LED or to use it as an input unit.
06. 8 LED for indicating output.
07. Buzzer for indicating output or to generate tone.
08. 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 expansion.

09. DS1307 IC to be used as Real Time Clock
10. L293D Dual H-Bridge Motor Driver IC with two 5V DC motor.
11. MAX232 IC with DB9 Connector for serial port communication.
12. Humidity Sensor DHT11.
13. Ultrasonic Sensor HC-SR04.
14. Gas/Smoke/Alcohol Sensor MQ-135.
15. Temperature Sensor LM35.
16. LDR.
17. 4x4 Keypad Matrix.
18. Weight : 3.0 Kg. (Approx.)
19. Dimension : W 415 x H 165 x D315

Accessories

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

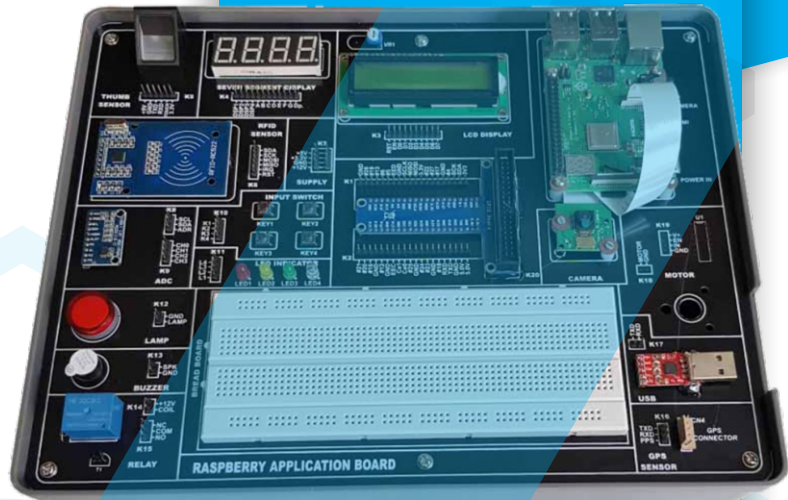
Other Apparatus

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

Note: Specifications are subject to change.

Raspberry Application Board

Order Code - 52072B



Specification

Raspberry PI 3 Model B+

- ☑ Broadcom BCM2837B0, Cortex-A53 (ARMv8) 64-bit SoC @ 1.4GHz
- ☑ 1GB LPDDR2 SDRAM
- ☑ 2.4GHz and 5GHz IEEE 802.11.b/g/n/ac wireless LAN, Bluetooth 4.2, BLE
- ☑ Gigabit Ethernet over USB 2.0 (maximum throughput 300 Mbps)
- ☑ Extended 40-pin GPIO header
- ☑ Full-size HDMI
- ☑ 4 USB 2.0 ports
- ☑ CSI camera port for connecting a Raspberry Pi camera
- ☑ DSI display port for connecting a Raspberry Pi touchscreen display
- ☑ 4-pole stereo output and composite video port
- ☑ Micro SD port for loading your operating system and storing data
- ☑ 5V/2.5A DC power input
- ☑ Power-over-Ethernet (PoE) support (requires separate PoE HAT)

Interconnection

- All interconnections are made using 0.8mm Single stand wires.
- ☑ Test points are provided to analyze signals at various points.
 - ☑ All ICS are mounted on IC Sockets.
 - ☑ Bare board Tested Glass Epoxy SMOBC PCB is used.
 - ☑ In-Built Power Supply of 3.3V,+5V & +12V with Power ON indication
 - ☑ Attractive ABS Plastic enclosures
 - ☑ Set of 0.8mm single stand wires for interconnections

List of Experiments

01. Starting Raspbian OS, Familiarising with Raspberry Pi
02. Components and interface, Connecting to ethernet, Monitor, USB.
03. Displaying different LED patterns with Raspberry Pi
04. Displaying Time over 4-Digit 7-segment Display using Raspberry Pi.
05. Setting up Wireless Access Point using Raspberry Pi
06. Fingerprint Sensor interfacing with Raspberry Pi
07. Raspberry Pi GPS Module Interfacing
08. IoT based Web Controlled Home Automation using Raspberry Pi.
09. Visitor Monitoring with Raspberry Pi and Pi Camera.
10. Interfacing Raspberry Pi with RFID.
11. Building Google Assistant with Raspberry Pi.
12. Installing Windows 10 IoT Core on Raspberry Pi.

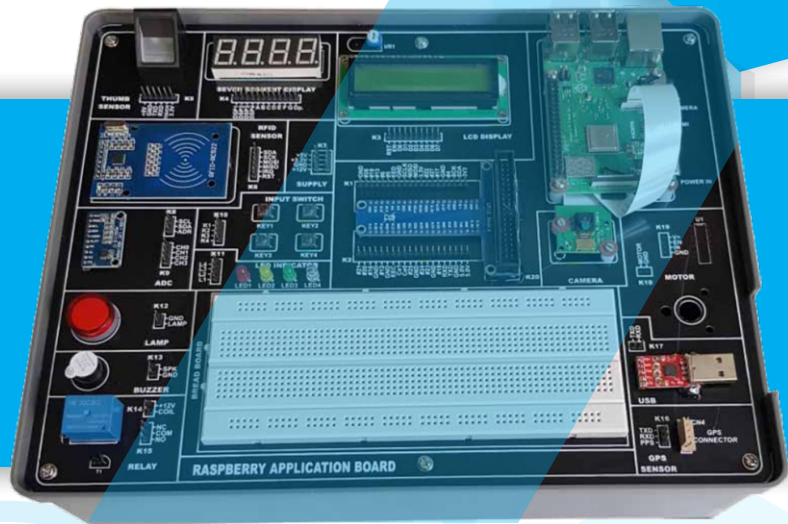
ON BOARD APPLICATIONS

- ☑ 4 Input Switches to give Digital Input
- ☑ 4 LEDs to display Digital Output
- ☑ 4 digit Seven segment displays
- ☑ 16*2 Alphanumeric LCD
- ☑ Miniature Buzzer
- ☑ 12V SPDT Relay
- ☑ Fingerprint Sensor Module
- ☑ RFID Sensor Module
- ☑ Neo 6m v2 GPS Module
- ☑ 16 Bit I2C 4 Channel ADC using ADS1115 module
- ☑ 40 Pin GPIO Extension Board for Raspberry Pi
- ☑ Pilot lamp Indicator
- ☑ Pi camera Module
- ☑ USB to Serial converter
- ☑ DC Motor
- ☑ 600 Tie Points Bread Board Area provided

Note: Specifications are subject to change.

ARDUINO Application Board

Order Code - 52072C



Specification

ARDUINO UNO/MEGA BOARD

- ☑ Microcontroller ATmega328
- ☑ Operating Voltage 5V
- ☑ Input Voltage (recommended) 7-12V
- ☑ Input Voltage (limits) 6-20V
- ☑ Digital I/O Pin14 (of which 6 provide PWM output)
- ☑ Analog Input Pins 6
- ☑ DC Current per I/O Pin 40 mA
- ☑ DC Current for 3.3V Pin 50 mA
- ☑ Flash Memory 32 KB (ATmega328) of which 0.5 KB used by bootloader
- ☑ SRAM 2 KB (ATmega328)
- ☑ EEPROM 1 KB (ATmega328)
- ☑ Clock Speed 16 MHz

On Board Applications

- ☑ 4 Input Switches to give Digital Input
- ☑ 4 LEDs to display Digital Output
- ☑ 4 digit Seven segment displays
- ☑ 16*2 Alphanumeric LCD
- ☑ Miniature Buzzer
- ☑ 12V SPDT Relay
- ☑ Fingerprint Sensor Module
- ☑ RFID Sensor Module
- ☑ Neo 6m v2 GPS Module
- ☑ 16 Bit I2C 4 Channel ADC using ADS1115 module
- ☑ 40 Pin GPIO Extension Board for Arduino
- ☑ Pilot lamp Indicator

Interconnection

All interconnections are made using 0.8mm Single stand wires.

- ☑ Test points are provided to analyze signals at various points.
- ☑ All ICS are mounted on IC Sockets.
- ☑ Bare board Tested Glass Epoxy SMOBC PCB is used.

- ☑ In-Built Power Supply of 3.3V,+5V & +12V with Power ON indication
- ☑ Attractive ABS Plastic enclosures
- ☑ Set of 0.8mm single stand wires for interconnections

List of Experiments

- Starting and connecting Arduino board with Computer
- Displaying different LED patterns with Arduino
- LCD interfacing with Arduino
- DC Motor Interfacing with Arduino
- Buzzer & relay interfacing with arduino
- Displaying Time over 4-Digit 7-segment Display using Arduino
- Fingerprint Sensor interfacing
- GPS Module Interfacing
- Visitor Monitoring with Camera interfacing.

Note: Specifications are subject to change.



IOT DEVELOPMENT Board

Order Code - 52072D

General Description

52072D Experimental Set Up has been designed specifically for beginners 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
11. Module with Mobile.
12. To Interfacing 20*4 LCD with ESP32 Board.
13. To Interfacing OLED with ESP32.
14. OLED Image Display.
15. To Develop Program For Sensing Environment Humidity By Interfacing Humidity Sensor DHT11 With OLED.
16. To Develop Program For Interfacing 7 Segment Display.
17. To Develop Program For Generating Tone Using Buzzer.
18. ADC using the ESP32.
19. To Develop Program For Designing Real Time Clock Using DS1307 IC.
20. To Develop Program to Control DC Motor with ESP32.
21. To Develop Program For Interfacing 4x4 Keypad Matrix with ESP32.
22. To Develop Program For Measuring Distance By Interfacing Ultrasonic Sensor HC- SR04 With ESP32.
23. To Develop Program for Interfacing LDR With ESP32.
24. To Develop Program For Interfacing IR Sensor.
25. Moving Object Detection Detection Using the ESP32 with PIR Sensor.
26. SD Card Module Interfacing Using the ESP32.
27. To Develop Program for Sensing Smoke & Its Level By Interfacing Smoke Sensor MQ-135 with ESP32.
28. ESP32 web servers.

Note: Specifications are subject to change.

IOT DEVELOPMENT Board

Order Code - 52072D

28. Controlling LED Brightness with the Slider on ESP32 Web Server.
29. Temperature and Humidity using ESP32 web Server.
30. Control outputs with Momentary Switch(Work as Push)
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)
- 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 expansion.
- 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

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.

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.

Note: Specifications are subject to change.

52072E-incorporates one of the latest IoT applications in real-time weather monitoring. It provides users to have real-time access of weather data from different locations in areas covered by mobile network.

Weather information like temperature, humidity, wind speed and direction, rainfall, UV index and solar radiation is gathered simultaneously from TESCA WEATHER MONITORING SYSTEM. All the data can be centralized, organized and sent to the observatory through

THINKSPEAK/ BLYNK platform. Through cloud management software, the data from weather stations is displayed in the form of dashboard & charts. Since the data transmission is instantaneous, alert is triggered in cloud management software once abnormal weather data is received. The observatory can issue warning signal to the public immediately after poor weather condition is recognized.

Overall TESCA is a very versatile system, allowing users to examine data that is essential to their operations.

Applications:

- | | | |
|-------------------------|------------------------------|-----------------------------|
| 01. Agriculture | 02. Conservation Engineering | 03. Environmental Education |
| 04. Weather Services | 05. Fire Station | 06. Alternative Energy |
| 07. Meteorology | 08. Solar Power Project | 09. Wastewater Treatment |
| 10. Construction | 11. Data Centers | 12. Waste Management |
| 13. Disaster Mitigation | | |

Features:

- | | |
|---------------------------------------|----------------------------------|
| 01. High Accuracy Reliability | 02. Communication over cloud |
| 03. Battery Charging from Solar Panel | 04. Real time Data Access on Web |
| 05. Low Maintenance | |

Technical Specification

Sensors Specification

01 Air Temperature Sensor (DS18B20):

- Operating Range : -55°C to +125°C
- Accuracy : ±0.5°C

02 Tmospheric Pressure / Relative Humidity Sensor (BME 280)

- Operating Range : 20-80%
- Accuracy : 1%

03 Wind Speed / Direction Sensor (Provision)

- Speed : 0 to 20,/s
- Resolution : 1m/s
- Direction : North, East, West, South, North-East, East-South, North-West, South-West

04 Rainfall Sensor (Provision) : Tipping bucket in mm

05 UV Index Sensor (GY-1145)

- Response wavelength : 200nm-370nm
- Response time : 5sec.

06 Solar Radiation Sensor (BH1750)

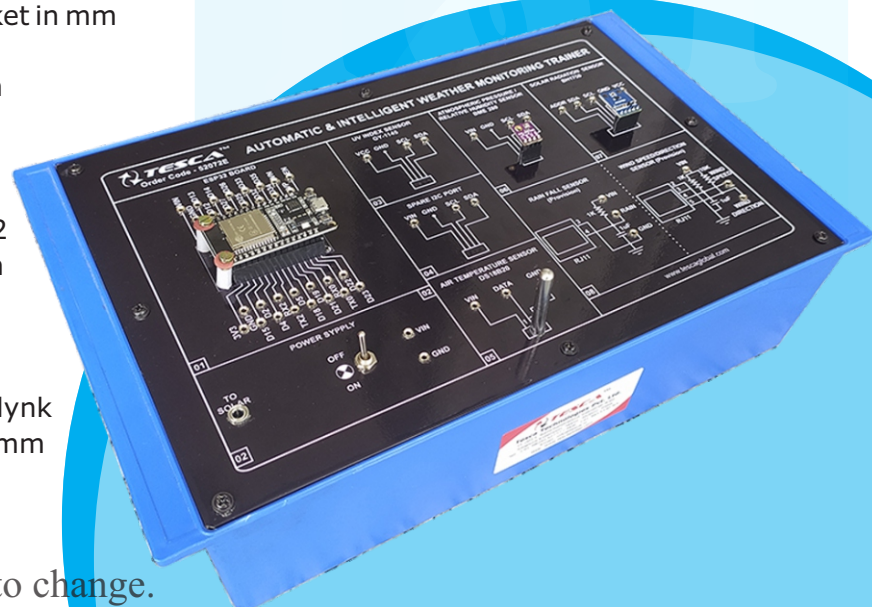
- Output : 0-2VDC
- Range : 0 to 2000W/m2
- Spectral Response : 400 to 1100nm

07 Power Supply

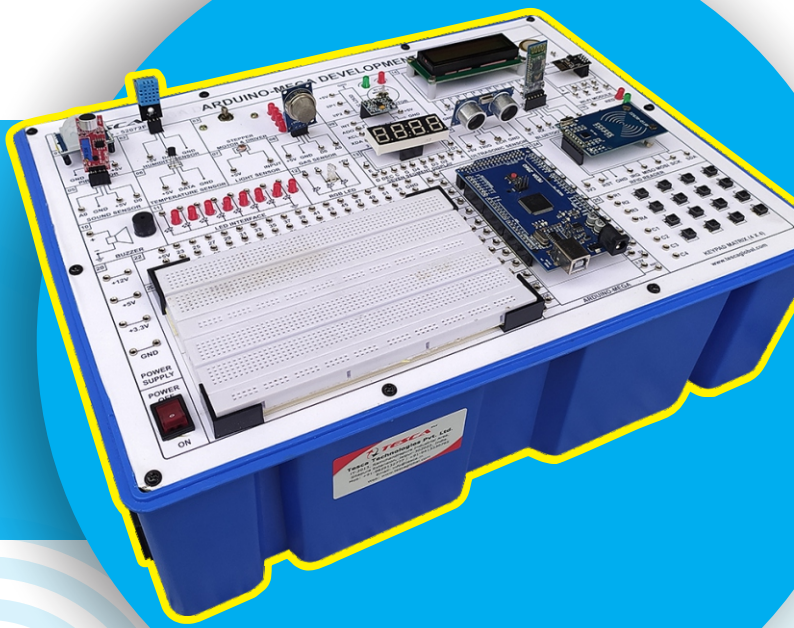
- Battery : 5V
- Solar Panel : 1.2W
- Wireless Transmission : Thinkspcak / Blynk

08. Dimension : 200 x 300 x 73mm

09. Weight : 1Kg (Approx)



Note: Specifications are subject to change.



Arduino-Mega Development Board

Order Code - 52072F

Introduction

Arduinio is Open Platform, which can check the result of Control without studying Electronic engineering or Computer engineering , because this makes various Hardwares with so easy language. This provides own Software so we do not need other information. We can compile and download at a time if connecting Hardware with patch codes, programming with Block building program and pushing a button. And we do not need to know the function of Compile and Download. We can see the result immediately and we have increased interests so this will help us use other system. From the process to solve questions of operation one by one continuously, we can study how to control various devices. We can use this to various fields after studying how to use various sensors. This provides Bread board and Ext. Power so user can make other circuit by themselves.

Features

1. Arduinio IDE provided
2. Completely compatible with Arduino Standard Shield
3. Programmable immediately to block program just with basic circuit without wiring
4. Designed for wiring to desired pin
5. The latest version Arduinio 1.0.5.
6. Bread board and various Powers usable for application
7. 20 kinds of I/O device
8. Available to controlled by Smart phone with built-in Bluetooth and Wireless LAN.

(Note : Android App is not provided)

Specifications

MCU Board

Type	Specification	Remark
MCU	ATmega2560	
Operating Voltage	5V	
Input Voltage	7-12VDC	
Max. Input Voltage	6-20V	
GPIO	70 pin, current 50mA	Including PWM pin
ADC	16Ch	
Flash Memory	256KByte	Bootloader 8KByte
SRAM	8KByte	
EEPROM	4KByte	
Clock	16Mhz	External Crystar
Compatible Shield	Compatible with Arduino Shield	

Note: Specifications are subject to change.

Arduino-Mega Development Board

Sensor Board

NO	Type	Description	Interface
1	PIR	PIR motion sensing sensor, adjustable Sensitivity and Response Time	GPIO
2	3-axis Gyro	Analog output included, measurable of Tilt	ADC
3	Sound	Sensing after amplifying noisy around. Microphone	ADC
4	LED	SPi RED LED SEA. Controlled with I C chip	GPIO
5	Gas	LNG, LPG, Propane, Butane measurable.2,000-10,000 PPM measurable	ADC
6	Wi-Fi	Chip Antenna IEEE 802.11 b/g 2.4GHz	SPI
7	Ultrasonic	NT-TS601 20cm -400cm distance measurable	GPIO
8	Bluetooth	Connectable directly with Chip Antenna, Smart phone	UART
9	RFID	13.56MHz Read Range SCm,RFID card 2EA. UART type	UART
10	Push Button	4x4 Push Button (16EA button)	GPIO
11	Segment	4Digit, Anode	I ² C
12	Text LCD	16x2 Line	GPIO
13	Piezo Sensor	Used as Buzzer or Speaker. Responded to Shock and Sound waves ADCaround Capacitance 10nF ± 30%	GPIO ADC
14	RGB LED	Various colors displayable with adjusting brightness of each Red, Green, Blue	GPIO
15	Humidity Sensor	Measuring Analog output value by Humidity, 0-100% humidity measured	GPIO
16	Buzzer	Operating voltage :5VDC / Frequency: 2400 ±50Hz, Current consumption: Max. 35mA / SPL: Min. 90dB	ADC PWM
17	Light Sensor	Analog output by brightness, 20 Ix - 100 Ix, connected with ADC	ADC
18	Temp. Sensor	Digital Temperature Measurement sensor, error 40°C-125°C (±0.5°C)	I ² C
19	Step Motor	1.8°/pulse, Wheel provided	PWM
20	DC Motor	Output avg. Current 1.2A, max. 3.2A, Wheel provided	PWM

Main Configuration

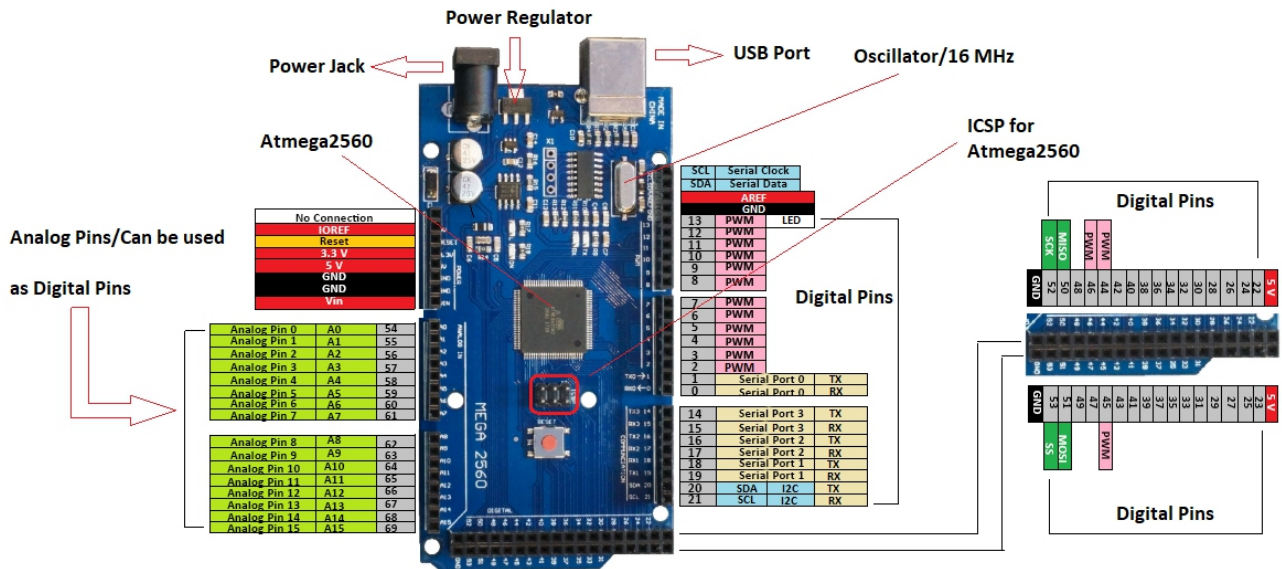
Circuit in Arduino-Mega Development Board is composed enough to make us understand the system basically. And this provides Bread board and various Voltages. We can use Bread board to make application circuit and test it.

- | | | |
|-----------------------------------|---|-----------------------|
| 1. PIR sensor | 2. Humidity sensor | 3. Step motor |
| 4. DC motor | 5. Sound sensor | 6. Temperature sensor |
| 7. Light sensor | 8. Gas sensor | 9. 3 axis Gyro sensor |
| 10. Buzzer | 11. LED 8EA | 12. RGB LED 1EA |
| 13. Seven Segment Display | 14. TEXT LCD | 15. Piezo sensor |
| 16. Ultrasonic Distance sensor | 17. Bluetooth module | 18. Wi-Fi Module |
| 19. Red/Green LED | 20. 16EA Buttons | 21. Bread board |
| 22. Aduino-Mega | 23. Wiring port(corresponded to no.21 port) | |
| 24. DC voltage(+12V, +5V, +3.3V) | 25. 13.56MHz RFID reader | |

Note: Specifications are subject to change.

Arduino-Mega Development Board

Block Diagram



List of Experiments

Educational Contents

Learning Arduino-Mega Development Board Arduino programming

- 1st Week – AVR Microcontroller
- 2nd Week – Arduino Development Environment
- 3rd Week – Basic Structure of Arduino Program
- 4th Week – LED and Buzzer Control
- 5th Week – 7 Segment Display
- 6th Week – LCD Display
- 7th Week – Push Button (4x4 Matrix) Control
- 8th Week – DC Motor and Stepper Motor Control
- 9th Week – Humidity and Temperature Sensor Control
- 10th Week – LDR and PIR Sensor Control
- 11th Week – Sound Sensor and Piezo Sensor Control
- 12th Week – Gyro Sensor and Smoke Sensor Control
- 13th Week - Ultra Sonic Sensor Control
- 14th Week – RFID Reader Test
- 15th Week – Bluetooth Test
- 16th Week – Wi-Fi Test

Note: Specifications are subject to change.

Arduino-Uno IOT Development Board

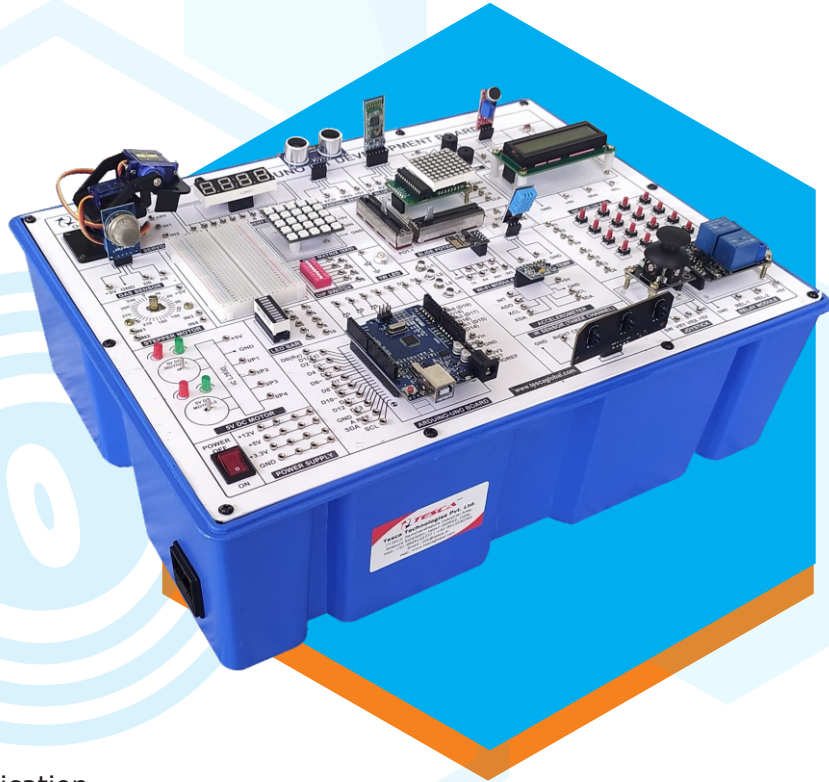
Introduction

Arduino is an open-source physical computing platform based on a simple I/O board and a development environment that implements the Processing / Wiring language. Besides easy-to-use hardware and software interface, Arduino is designed to be as flexible as possible to fit your project's needs.

52072G Arduino-UNO IOT Development Board provides an environment for Arduino to interact with different forms of electronics (26 module blocks) with simple codes and connections. With a universal breadboard, it is convenient for students to construct the circuits that are not provided by the 52072G.

Features

1. Arduino IDE provided
2. Designed for wiring to desired pin
3. The latest version Arduino 1.0.5.
4. 26 kinds of I/O device
5. Bread board and various Powers usable for application
6. Completely compatible with Arduino Standard Shield
7. Programmable immediately to block program just with basic circuit without wiring
8. Available to control by Smart phone with built-in Bluetooth and Wireless LAN.



Technical Specifications

MCU Board

Type	Specification
Microcontroller	ATmega328P
Operating Voltage	5V
Input Voltage (recommended)	7-12V
Input Voltage (limit)	6-20V
Digital I/O Pins	14 (of which 6 provide PWM output)
PWM Digital I/O Pins	6
Analog Input Pins	6
DC Current per I/O Pin	20 mA
DC Current for 3.3V Pin	50 mA
Flash Memory	32 KB (ATmega328P) of which 0.5 KB used by bootloader
SRAM	2 KB (ATmega328P)
EEPROM	1 KB (ATmega328P)
Clock Speed	16 MHz
LED_BUILTIN	13
Length	68.6 mm
Width	53.4 mm

Note: Specifications are subject to change.

Arduino-Uno IOT Development Board

Main Configuration

Circuit in Arduino-UNO IOT Development Board is composed enough to make us understand the system. In addition, this provides Breadboard and various Voltages. We can use Breadboard to make application circuit and test it.

- | | | |
|--------------------|--------------------------------|-----------------------------|
| 1. Arduino Uno | 2. Power Supply | 3. 4x4 Keypad |
| 4. DIP Switch | 5. CDS & Microphone | 6. Joystick |
| 7. Accelerometer | 8. Humidity/Temperature Sensor | 9. IR Line Tracer |
| 10. Ultrasonic | 11. Slide Potentiometer | 12. LED Matrix |
| 13. LED Bar | 14. 1W LED | 15. RGB LED |
| 16. Serial RGB LED | 17. I2C LCD 16x2 | 18. 4-Digit-Segment Display |
| 19. Buzzer | 20. Relay | 21. Servo Motor |
| 22. DC Motor | 23. Step Motor | 24. Bluetooth |
| 25. Wi-Fi | 26. Breadboard | |

List of Experiments

Learning Arduino-Uno Development Board Arduino programming

1. To develop Arduino program for blinking of LED
2. To develop Arduino program for fading of LED
3. To develop Arduino program for controlling LED brightness with a potentiometer
4. To control active and passive buzzers using DIP switches
5. To develop Arduino program for controlling parallel RGB LEDs
6. To develop Arduino program for controlling a 5x5 LED matrix with rainbow colors
7. To develop Arduino program for controlling a 4-digit seven-segment display
8. To develop Arduino program for displaying an emoji on an 8x8 LED matrix
9. To develop Arduino program for displaying text on an i2c LCD
10. To develop Arduino program for interfacing a 4x4 keypad and I2C LCD
11. To develop Arduino program for interfacing mpu6050 and detecting motion
12. To develop Arduino program for interfacing IR sensors and controlling LED bar
13. To develop Arduino program for interfacing dht sensor and displaying temperature and humidity on LCD
14. To develop Arduino program for interfacing smoke sensor and activating alarm system
15. To develop Arduino program for interfacing ultrasonic sensor and displaying distance on LCD
16. To develop Arduino program for interfacing LDR and controlling LED
17. To develop Arduino program for interfacing KY-038 sound sensor module and controlling LED
18. To develop Arduino program for controlling two dc motors using L293D motor driver
19. To develop Arduino program for controlling a step per revolution motor using the stepper library
20. To control two axis servo motors using a joystick
21. To develop Arduino program for remote control LED using Bluetooth module (HC-05) and remotexy platform
22. To develop Arduino program for remote control LED relay using wifi module (ESP-01) and remotexy platform

Note: Specifications are subject to change.