

VPL INFOTECH & CONSULTANTS



AN ISO 9001:2015 CERTIFIED COMPANY



ATAL TINKERING LAB PROPOSAL

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301, First Floor, Savitri Sadan-II, 15 Comm. Centre, Preet Vihar, Delhi-110092 (India)

ATAL Tinkering Lab (ATL)

The Atal Tinkering Lab (ATL) is one of various programs initiated by Atal Innovation Mission (AIM) under Niti Ayog.

ATAL Tinkering Lab (ATL) is aimed to foster innovation and creativity amongst the young students of India. This project aims at developing a core skill set among the school students that comprises of design mindset, Innovation, computational thinking, adaptive learning, practical problem solving, physical computing etc.

The Atal Tinkering Lab program derives its essence from the ancient Indian Gurukul education system and world's most successful Finish education system, focusing on self-learning methodology, hands-on practical training and exposure to real-world situations. ATL fosters curiosity and lets innovators start young. Students are free to think and explore, try and fail, even come up with something out of the box.

We Help you to Set Up ATL at Your School

VPL Infotech & Consultants has more than two decade of experience in designing, manufacturing & merchandising of various types of Lab Trainer Kits, Lab Equipments, DIY Kits, Teaching Aids, Simulators and Training Software for students of various Technological Institutions, IITs, Polytechnics, ITIs and Schools.

Considering above, we are naturally the best choice to provide all kinds of support to schools in establishing **ATAL Tinkering Lab (ATL)**.

We would like to offer our equipments and solutions to setup the Atal Tinkering Labs as envisioned by under AIM initiative of Niti Ayog.

We supply all the Four packages of necessary equipments and apparatus for ATL:

Package 1: Electronics Development, Robotics, Internet of Things and Sensors

Package 2: Rapid Prototyping Tools

Package 3: Mechanical, Electrical and Measurement tools

Package 4: Power Supply & Accessories and Safety Equipment

301, First Floor, Savitri Sadan-II, 15 Comm. Centre, Preet Vihar, Delhi-110092 (India)

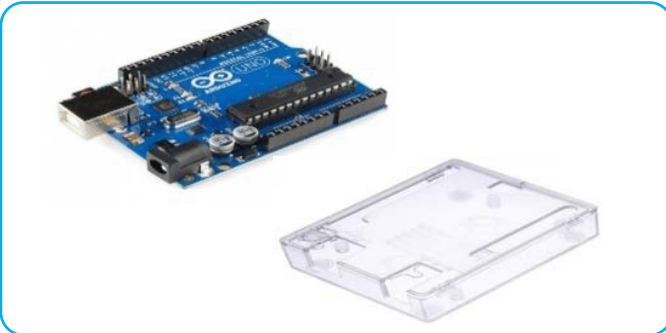
Phone: +91-11-42421466, 22542234, 22546754

Email: vplinf@vplinf.com, vplinf@gmail.com

Web-sites: www.vplinf.com, www.vplinfotech.com

ELECTRONICS DEVELOPMENT

Arduino Uno or equivalent



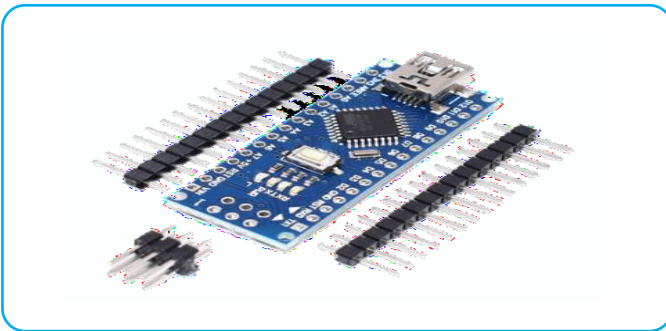
Arduino Uno

- ATmega328P - 8 bit AVR family microcontroller, equivalent or better.
- Operating Voltage: 5V
- Digital I/O Pins: 14 (of which 6 provide PWM output)
- PWM Digital I/O Pins : 6

Accessories:

- Case shell enclosure
- Compatible USB cable (length - 6 inch or more)

Arduino Nano or equivalent



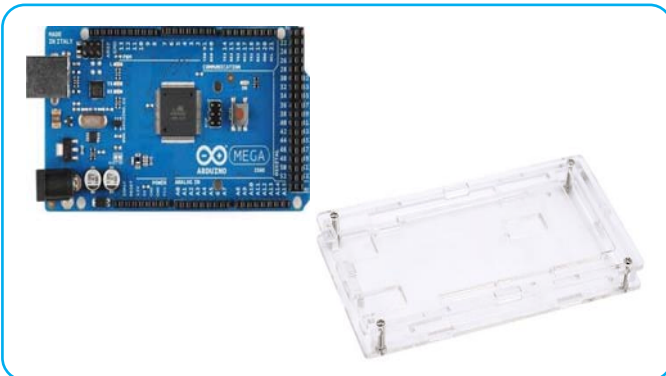
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- Analog Input Pins : 8

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Arduino Mega or equivalent



Arduino Mega

- ATmega 2560P - 8 bit AVR family microcontroller, equivalent or better.
- Operating Voltage: 5V
- Digital I/O Pins : 54 (of which 6 provide PWM output)
- Analog Input Pins: 16

Accessories:

- Case shell enclosure
- Compatible USB cable (length -6 inch or more)

Raspberry Pi 3 Model B+



RASPBERRY PI 3 MODEL B+, equivalent or better

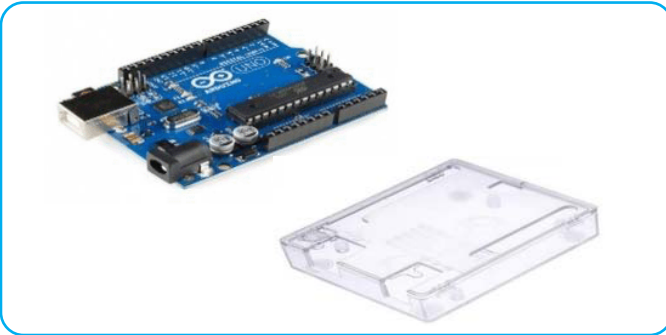
Accessories

- MicroSD card - 32 GB
- USB 3.0 cable (1 meter)
- HDMI to VGA - 1 meter
- HDMI to VGA adapter
- Case shell enclosure

Note: Images given are for representation only and the final equipment can change according to its specifications.

ELECTRONICS DEVELOPMENT

Arduino Uno or equivalent



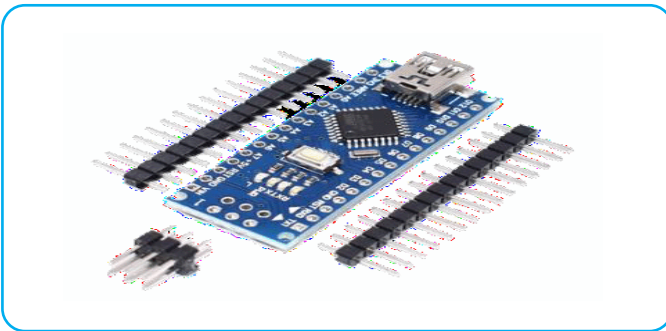
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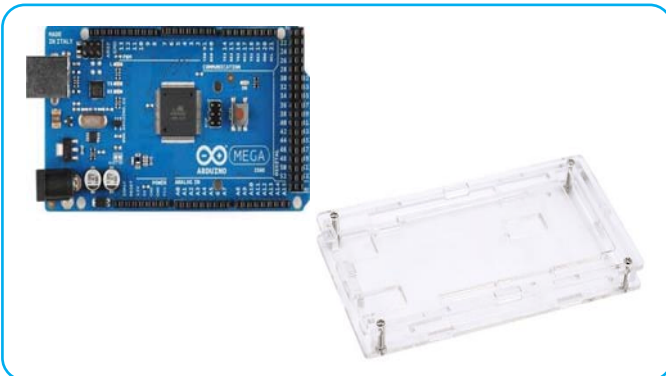
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Raspberry Pi 3 Model B+



RASPBERRY PI 3 MODEL B+, equivalent or better

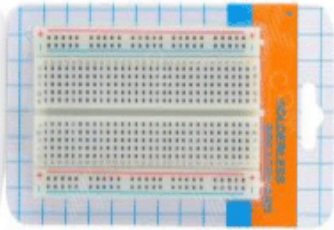
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ELECTRONICS DEVELOPMENT

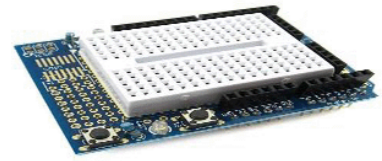
Breadboards & Mini Breadboard



Solderless 400 pin breadboard

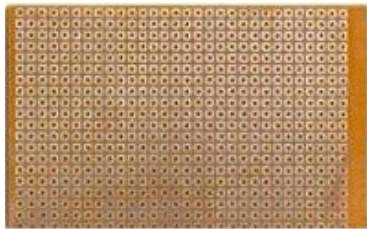


Solderless 800 pin breadboard



Self-Adhesive Prato Shield

General Purpose solderable Board



FR2 A Grade Material (140 x 90 mm)



FR2 A Grade Material (80 x 55 mm)

Berg Strips

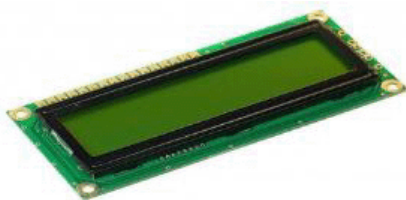


Female Berg Strip
2.54mm pitch, 40 pin single row, breakable pin



Male Berg Strip
2.54mm pitch, 40 pin single row, breakable pin

16x2 LCD display



Dot matrix LCD display
16 characters X 2 lines. 12C

USB Cables



USB Cable Set
(A to B, 12 inch or more)



USB Cable Set
(Mini, 12 inches or more)

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ELECTRONICS DEVELOPMENT

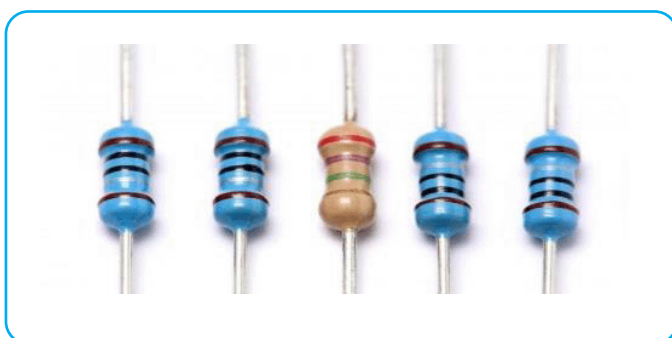
Battery



Specification

- 9-12V
- 2000 to 2500 mAh rechargeable battery with 2 chargers.
- Equivalent or better

Resistor Kit



One kit contains

- 30 carbon film resistors of 20 different resistance values each assorted, packaged together and labelled.
- Wattage: 0.125W to 1W
- Values: 0Ω, 1.5Ω, 4.7Ω, 10Ω, 47Ω, 100Ω, 220Ω, 330Ω, 470Ω, 680Ω, 1kΩ, 2.2kΩ, 3.3kΩ, 4.7kΩ, 10kΩ, 22kΩ, 47kΩ, 100kΩ, 330kΩ, 1MΩ

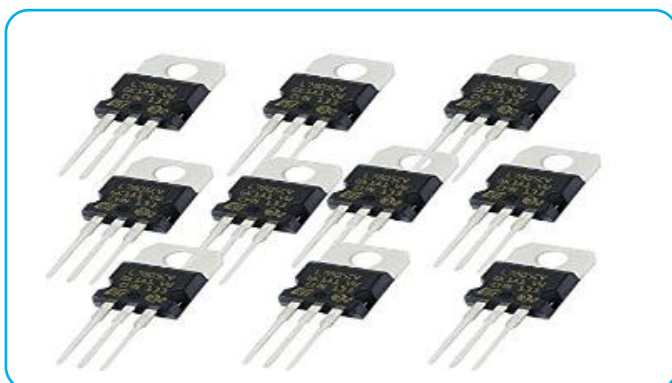
Capacitor Kit



One kit contains

- 20 electrolytic capacitors of 10 different capacitance values each.
- Assorted kit packaged together and labelled.
- Values: 10pF, 22pF, 100pF, 1nF, 10nF, 100nF, 1μF, 10μF, 100μF, 1000μF

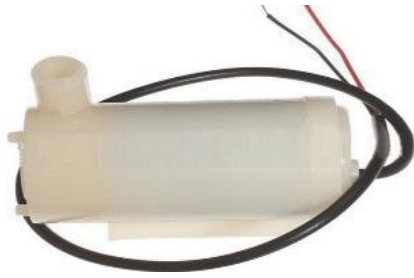
Linear Voltage Regulator



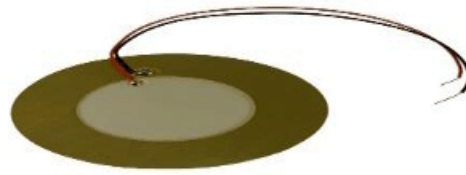
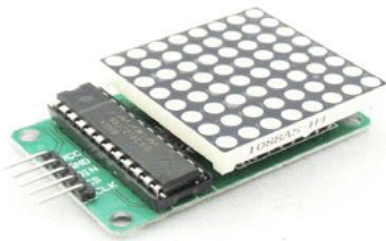
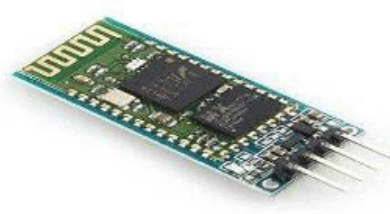
- 7805
- 7812
- 7809

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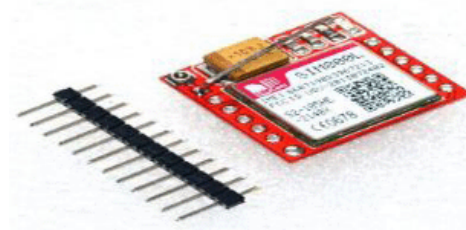
ELECTRONICS DEVELOPMENT

Water Pump module

DC12V 3W Submersible Water Pump

Piezoelectric PlateNormal Copper based
4 cm Diameter approx.**8*8 LED Matrix Module**Max7219 Dot LED Matrix Module
MCU Control LED Display Module**Bluetooth module**HC 05 Bluetooth module
Voltage Rating: 5 V**7 Segment Led Display**

LED 4-Digit Display Module

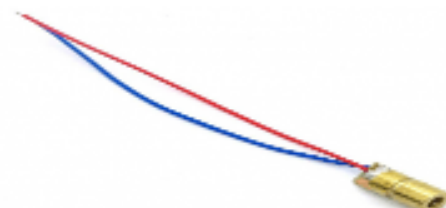
Voltage Rating: 2.4V to 5.5V
4-Pin interface: Vcc, Gnd, Data, Clock**GSM**

Sim900 GPRS Transfer Board

Micro Sim Gsm Core TTL Port Module for Arduino

GPS

GY-NEO6MV2 new GPS module

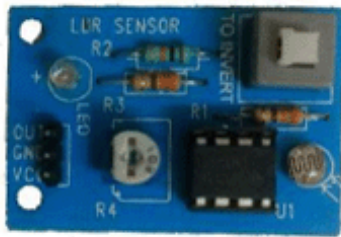
Laser Diode Emitter

650 nm 5mW Mini Laser Dot Diode Module

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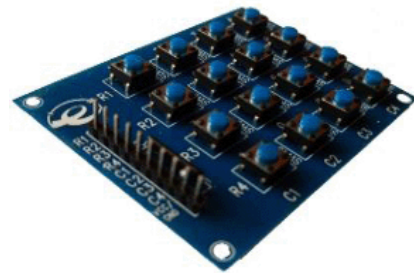
ELECTRONICS DEVELOPMENT

LDR Module



5mm/12mm Photosensitive LDR
Light Sensor Module

Keypad



Universal 16 Key Switch Keypad

JoyStick



2-axis joystick with push button function

Active Buzzer

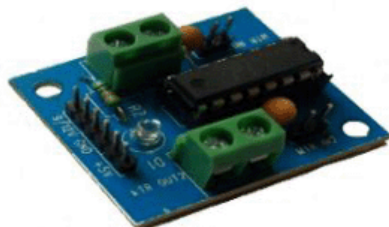


Small 5 volt



Big 5 volt

Motor driver Module



L293D

Sound Playback Module



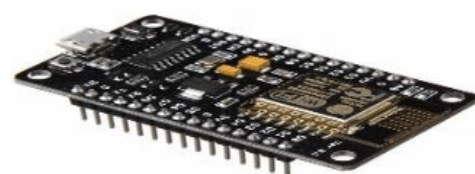
ISD1820 voice recording module or equivalent

DC Plastic Gear motor with wheel



12V, 150RPM, Side Shaft BO
(Battery operation) Motor

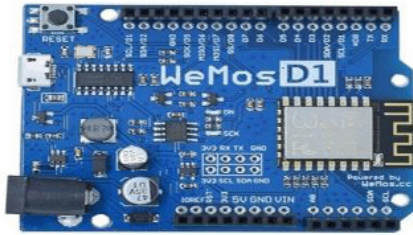
Node MCU



ESP 8266 I2C, 1 wire, plug and play

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ELECTRONICS DEVELOPMENT

WeMos D1 R2

WeMos D1 R2 with WiFi ESP 8266
Operating Voltage: 5V

Vibrating Motor

Weight: 10 Grams
Operating Voltage: 1.5 to 3V

Alligator Connectors

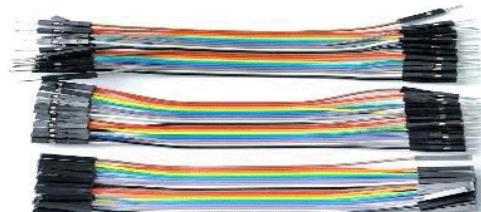
Multi-Colour Alligator Connectors - 12 inch

Battery clips with DC Jack

9-volt battery clips with DC Jack

Hook-up Wires

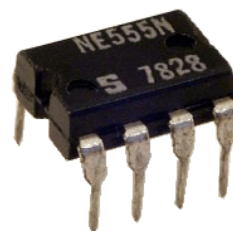
Red & Black set 100 Meters each

Jumper Cable

Male-Male, Male-Female & Female-Female

RGB LEDs

LEDs (Red, Green, Blue, Yellow & White)
Regular 5mm 3-5 volt Range

Timer IC - LM 555

LM 555 Timer IC
Voltage range - 4.5V to 16V

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ELECTRONICS DEVELOPMENT

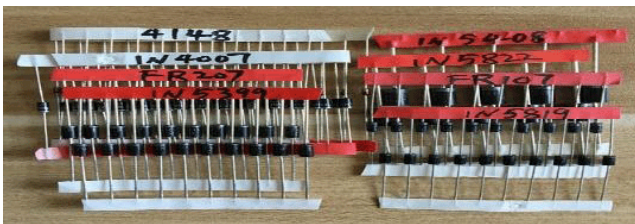
Atmega16u2



Specifications

- 8 bit microcontroller individual IC (DIP).
- Voltage range: 2.7V to 5.5V.
- Operational Range: -40°C to +80°C

Diodes and Transistors Kit



Specifications

- One Kit Contains - 25 Assorted Basic Diodes of 4 different types each.
- Types: NPN Transistor - 2N3904, BC547
PNP Transistor - 2N3906, BC557
Silicon Diode - 1N4148,
Power Diode - 1N4004/4001.
- Equivalent or better.
- Wattage: 1W,
- Current rating: 1A
- Assorted kit packaged together and labelled.

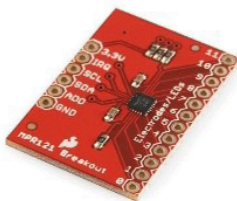
Button Switch Set



Specifications

- One Kit Contains - 100 buttons of different types.
- Types: Push, toggle, rotary, selector and slide switch.
- Assorted kit packaged together and labelled.

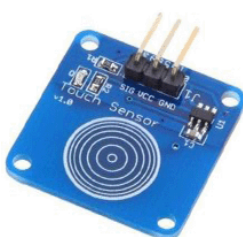
Capacitive touch Module



Specifications

- MPR 121 with I2C.
- Voltage Range: 2.5V to 3.6V DC.

Capacitive Touch Switch Module



Specifications

- Digital Capacitive touch switch module -TTP223B
- Voltage Range: 2V to 5V DC.

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INTERNET OF THINGS & SENSORS

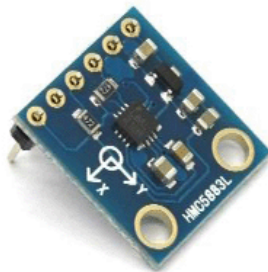
IR Sensors, Obstacle avoider sensor module



Specifications

- LM393
- Detection distance: 2 - 30 cm
- Detection angle: 30 - 40°

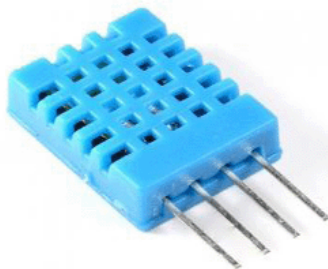
Triple Axis Magnetometer



Specifications

- 3-Axis Magneto resistive Sensors
- I2C Digital Interface
- Integrated 12-bit ADC
- Range of -8 to +8 Gauss
- 160 Hz Maximum o/p range

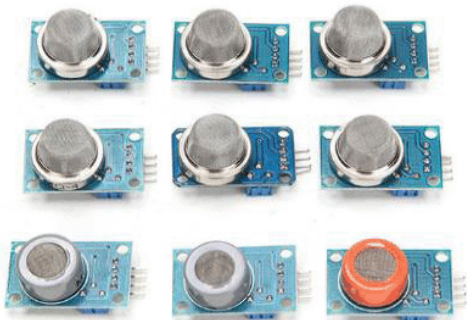
Humidity Sensor



Specifications

- Operating range: 20 - 95% RH
- Temperature: 0 - 60 Celsius
- Power supply: 1.5V AC (Max sine)
- Operating frequency: 500Hz - 2kHz

MQ Series



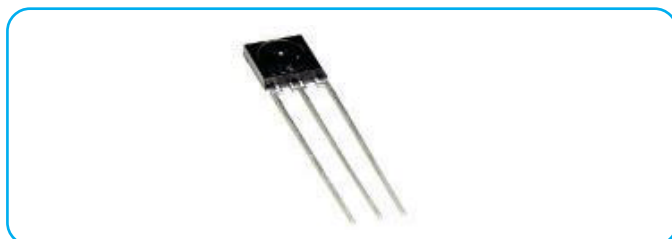
Specifications

- MQ - 2 Smoke Detection
- MQ-3 Alcohol - Ethanol Sensor
- MQ-4 Methane Natural Gas Sensor
- MQ-5 Methane Liquified Gas Sensor
- MQ-6 Liquified Petroleum Gas Sensor
- MQ-7 High Sensitivity CO Carbon Monoxide Sensor Detector
- MQ-8 Hydrogen Gas Sensor
- MQ-135 Air Quality Sensor

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INTERNET OF THINGS & SENSORS

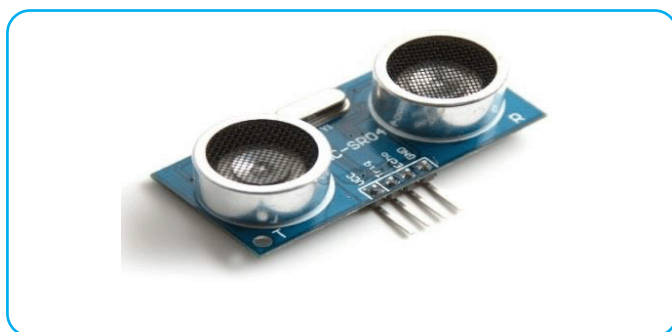
IR transmitter/ receiver



Specifications

- TSOP 1738
- Switching rate: 38 KHz
- Voltage Rating: 5V

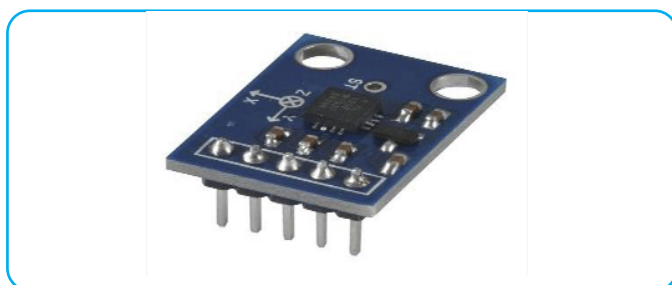
Ultrasonic Sensor Module



Specifications

- HC-SR-04 or compatible
- Working Voltage - DC 5V
- Working current - 15 mA
- Working Frequency - 40 Hz
- Range - 1 cm to 4 m
- Effectual Angle - <15°
- Measuring Angle - 30°
- Resolution - 0.3 cm

Triple Axis accelerometer



Specifications

- 3-axis sensing
- Small, low profile package
- 4 mm x 4 mm x 1.45 mm LFCSP
- Low Power: 350 μ A (typical)
- Single-supply operation: 1.8 V to 3.6 V
- Temperature stability

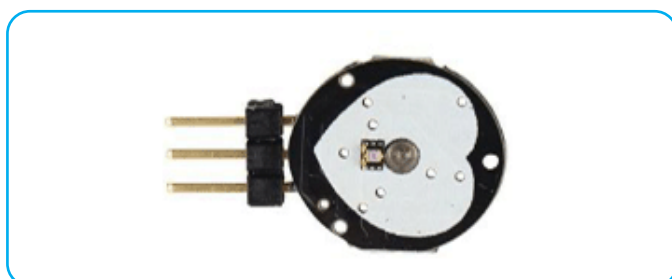
PIR Motion Detector Module



Specifications

- High digital pulse when motion detected
- Low digital pulse when idle /no motion detected
- Sensitivity range (up to 6 m)
- Power supply: 5V — 12V

Pulse Rate Heart Sensor



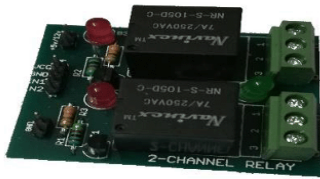
Specifications

- Pulse Rate Sensor
- Finger Based (finger or earlobe)
- Working voltage 3-5V

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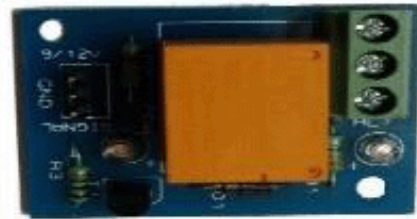
INTERNET OF THINGS & SENSORS

Relay Module



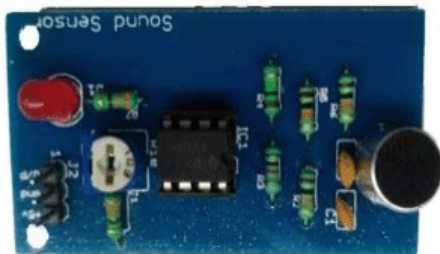
5V 10A - 2 Channel Relay Module
Compatible with Arduino

Relay Module



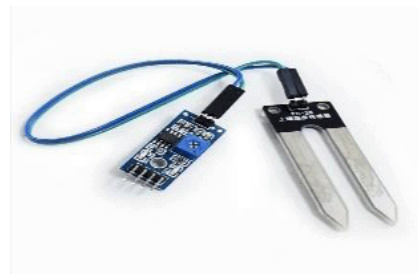
5V 10A - 1 Channel Relay Module
Compatible with Arduino

Big Sound microphone module



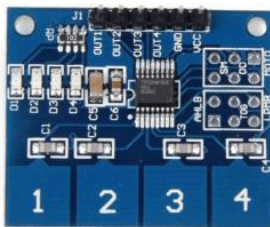
Large Electret capsule sound module

Soil Moisture Sensor module



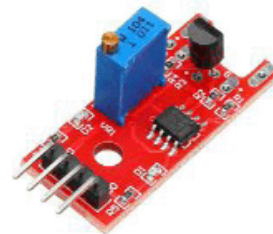
FC-28 with LM293 comparator
Operating Voltage: 3.3V to 5V

Touch Sensor



Capacitive Touch Sensor Module
TTP22X series, Voltage Range: 2.4V to 5.5V

Metal Touch Sensor Module



KY-036 or equivalent
metal touch sensor module

Rain Drop Sensor



Rain Sensitive, Rain Drop Detection Sensor Module
Voltage Range: 3.3V to 5.5V
Size: 5mm X 40mm or equivalent

Flex Sensor

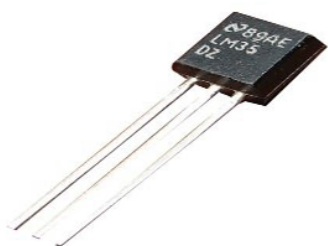


Flex Sensor. Size - 2.2 Inches

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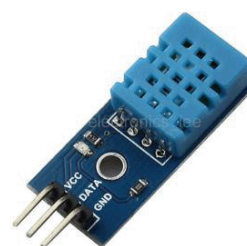
INTERNET OF THINGS & SENSORS

Temperature Sensor



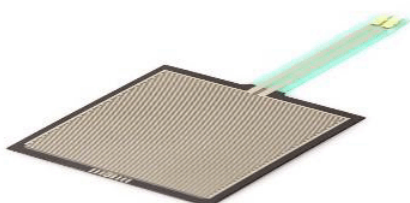
LM35 Full range temperature sensor
Voltage Range: 4V to 30V, Error: $\pm 0.5^{\circ}\text{C}$

Temperature and Humidity sensor module



DHT 11
Voltage Range: 3V to 5V

Force Pressure Sensor



Force sensitive resistor with a square 1.75x1.5" Sensing area

Colour Recognition Sensor



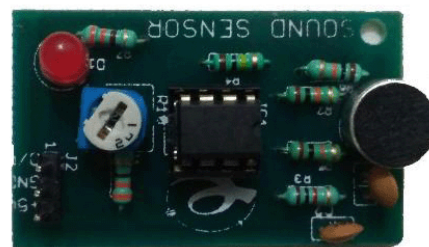
TCS3200 Colour Recognition Sensor

Water Flow Sensor



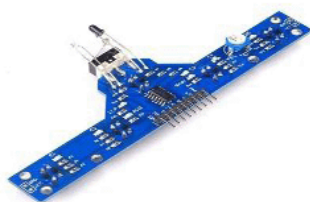
Arduino Compatible Water flow sensor
5V DC Input.

Sound Sensor



Sound Sensor Module, Microphones module

IR Sensors Array module for Line Following



8 IR Sensors Array module for Line Following
Operating Voltage: 5V

Power Bank

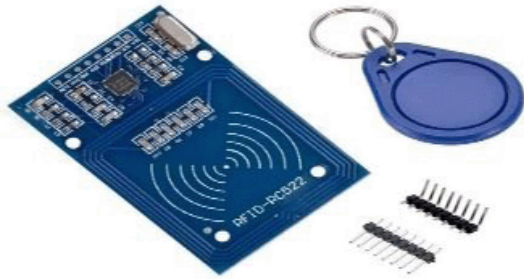


10000 mAh 5-volt Power Bank

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INTERNET OF THINGS & SENSORS

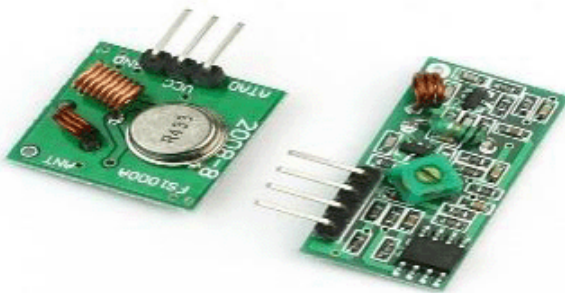
RFID Reader - Tags



Specifications

- Current :13-26mA / DC 3.3V
- Idle Current :10-13mA
- Sleep Current: 80uA
- Peak Current: 30mA
- Operating Frequency: 13.56MHz<30mA
- Read range between 20 cm to 1m

RF Modules Tx & Rx 315 MHz ASK

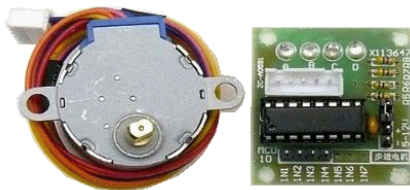


Specifications

- Frequency Range: 433.92/315 MHz
- Supply Voltage: 3 - 6 V
- Output: 4 - 16 Dbm
- Low power consumption
- Easy application

ROBOTICS

Stepper motor with Driver board



28BYJ-48 ULN2003 5V Stepper Motor +
ULN2003 Driver Board

DC motor



12V DC Gear 150 RPM

Servo motors



Position Servo Angle
based Metal Gear



Small Servo
Metal Gear



Continuous Metal
Gear Servo 360



Small Servo
Plastic Gear

Note: Images given are for representation only and the final equipment can change according to its specifications.

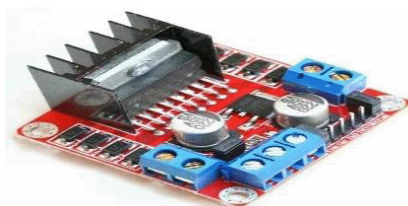
ROBOTICS

150 RPM BO Motor



150 RPM BO Motor

L298P Motor Driver



L298P Motor Driver Shield or
relative Driver Shield

Servo Motor Tester



CCPM 3 channel Servo Tester

DIY KIT

Robotics DIY Kit



Robotics DIY kit with
Programmable Intelligent Brain/brick

Mechanical (Modular) Construction kit



Metal/plastic mechanical construction kit
compatible with electronic equipment

STEM LEARNING/APPLICATION KIT

Drone Kit



Educational Purpose

Aerospace Kit

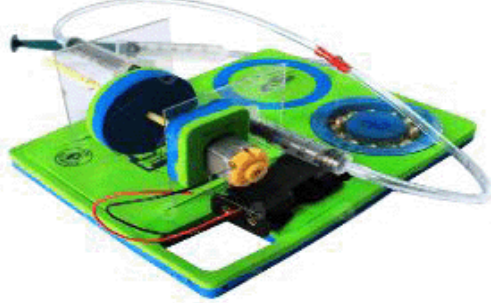
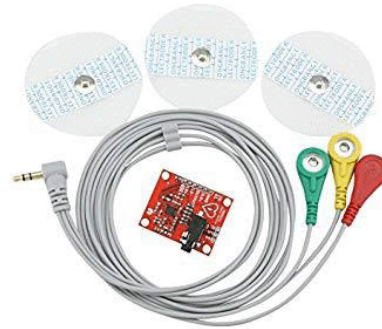
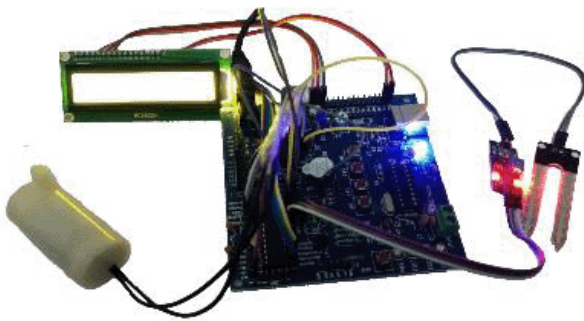
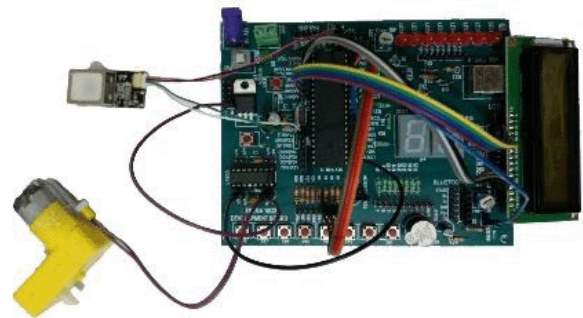
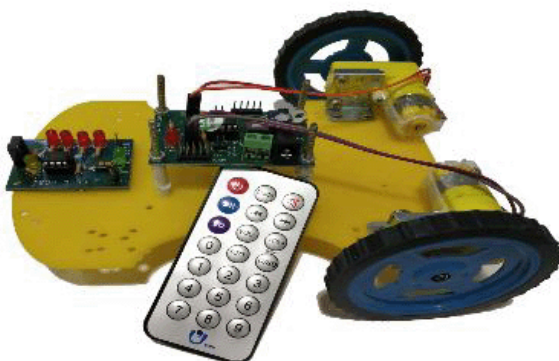


Combination of Aerospace kit

Note: Images given are for representation only and the final equipment can change according to its specifications.

STEM LEARNING/APPLICATION KIT
Automobile Kit

Make Hydraulic Brake


DIY Friction Kit of Hydraulic Brakes & its functions
Bio-Medical Kit

DIY kit for ECG Test & present the graph & values of person
Agritech Kit

Soil Imigration DIY System Kit
Water/ Sanitation Kit Bio Tech Kit

DIY Kit for Door Access & Control system with Home Application Control
Other Potential STEM Application Kit

DIY Kit for Wireless Control Robot

Note: Images given are for representation only and the final equipment can change according to its specifications.