

Internet of Things Master Class Day 5

M.K.Jeevarajan
www.pantechsolutions.net

What you will learn Today

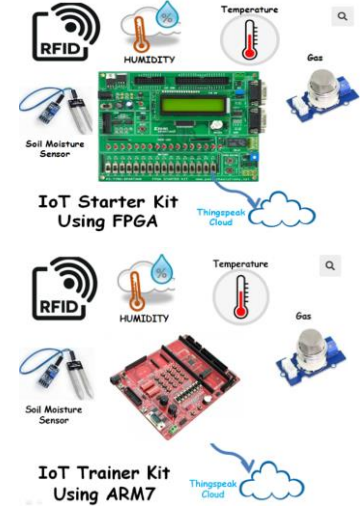


Sensors for IoT



About Pantech Prolabs India Pvt Ltd

- ✓ Started in the Year 2004
- ✓ Lab equipments and Sensor Interface
- ✓ Manufacturer of Brainsense EEG Headset
- ✓ Reconfigurable Algorithms on AI
- ✓ Manufacture of AI development Boards
- ✓ Power electronics, Fuel cell and Renewable Energy trainers



Vision

To help 10 Million students around the globe to learn technology in a easy way

www.pantechsolutions.net

About me



Education



College of Engineering, Guindy

Masters of Engineering, Applied Electronics

2002 – 2004



Govt College of Engg,Bargur

Bachelor of Engineering (B.E.), Electrical, Electronics and Communications Engineering, A

1998 – 2002

My Primary Expertise

Microcontroller Architecture: 8051,PIC,AVR,ARM,MSP430,PSOC3

DSP Architecture: Blackfin,C2000,C6000,21065L Sharc

FPGA: Spartan,Virtex,Cyclone

Image Processing Algorithms: Image/Scene Recognition, Machine Learning, Computer Vision, Deep Learning, Pattern Recognition, Object Classification ,Image Retrieval, Image enhancement and denoising.

Neural Networks : SVM,RBF,BPN

Cryptography :RSA,DES,3DES,Elliptic curve,Blowfish,Diffe Hellman

Compilers: Keil,Visual DSP++,CCS, Xilinx Platform studio,ISE, Matlab, Open CV

<https://www.linkedin.com/in/jeevarajan/>

www.pantechsolutions.net

Announcement

- Attendance Link at 9 pm
- Minimum attendance required for an E-Certificate is 27 Days. Attendance link will be valid for 1 hrs. after the event.
- For Internship Candidates no attendance required ,it will be accessed from the LMS Portal. (learn.pantechsolutions.net)
- Recorded Video Streaming for LAB classes to improve Learning Experience
- PPT in facebook group
- Source code and projects available download only for Internship candidates

Mindset Lesson for the Day

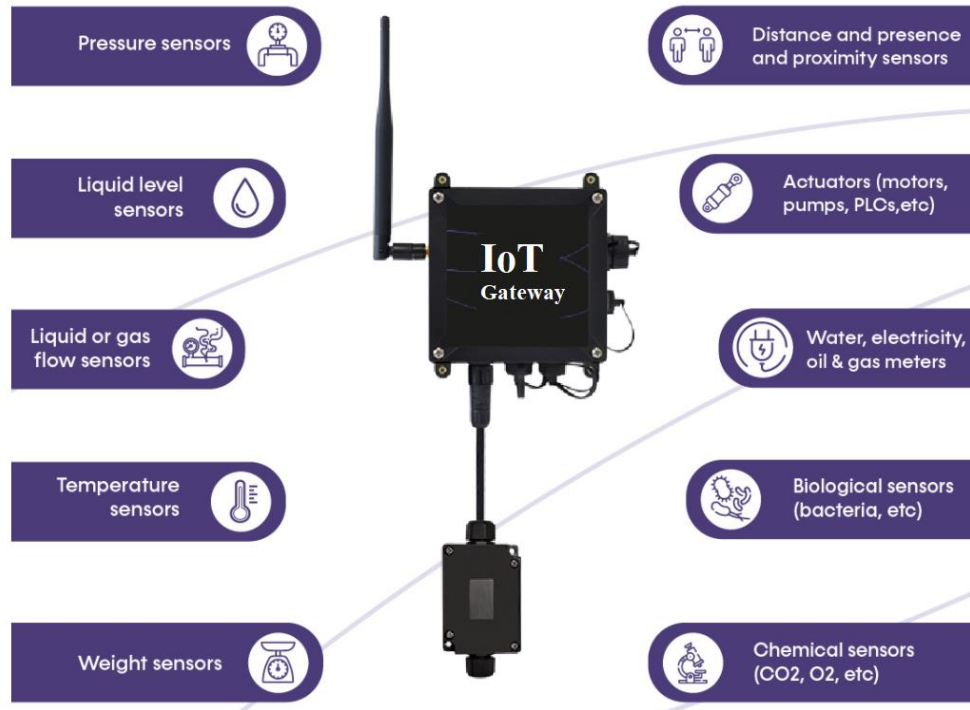
Your environment is stronger than the will power.

Sensors for IoT

IoT Solutions for Agriculture

SIZE OF FIELDS	VALUE OF CROPS	WHAT FACTOR IS USUALLY MORE IMPORTANT TO CONSIDER?	SENSORS RECOMMENDED	EXAMPLES
Large fields	Low yield crops per hectare	Micro-climate factors	<ul style="list-style-type: none">✓ Temperature, humidity and pressure✓ Weather station	<ul style="list-style-type: none">✓ Cereals✓ Corn✓ Coffee
Small or medium fields	High yield crops per hectare, fragile crops	<ul style="list-style-type: none">✓ Soil parameters✓ Plant level oriented	<ul style="list-style-type: none">✓ Soil moisture✓ Soil morphology✓ Leaf humidity✓ Solar radiation	<ul style="list-style-type: none">✓ Fruits✓ Vegetables✓ Flowers

IoT Solutions for Industry 4.0



IoT Solutions for Smart Environment

- Air quality, pollution
- Noise levels
- Waste management
- Water resource Management
- Traffic & Congestion
- Structural Health
- Lighting
- Parking
- Buildings
- People
- Parks and green areas

Sensors available:

- Temperature, humidity and pressure
- Carbon Monoxide (CO) for low concentrations
- Carbon Dioxide (CO₂)
- Oxygen (O₂)
- Ozone (O₃)
- Nitric Oxide (NO)
- Nitric Dioxide high accuracy (NO₂)
- Sulfur Dioxide high accuracy (SO₂)
- Ammonia (NH₃)
- Methane (CH₄) and Combustible Gas
- Hydrogen Sulfide (H₂S)
- Particle Matter (PM1 / PM2.5 / PM10) – Dust I

BIO SIGNALS Monitoring

- ECG– ElectorCardio Graphy
- EMG –Electromyo graphy
- EEG–ElectroEnchepahlogrphy
- EOG–Electroocular graphy
- GSR–Galvanic skin response
- EGG–Electrogastography
- ERG–Electro retinography

IoT Solutions for Medical



Snore



Temperature



Glucometer



Glucometer BLE



GSR



ECG



EMG



Spirometer



SPO2



SPO2 BLE



Blood Pressure



Blood Pressure BLE

IoT Solutions for Medical



Airflow



Body Position



Scale



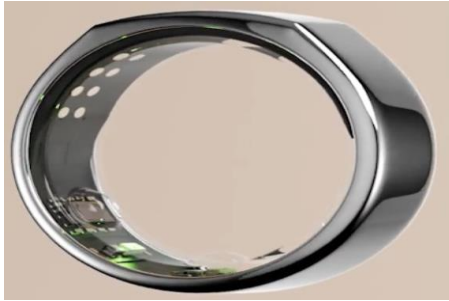
Alarm Button



BCG- Bed
sensor



IoT Solutions for Health and Wellness



<https://ouraring.com/>



<https://store.neurosky.com/>



IoT Solution for Smart Tracking



**SIM808 Bluetooth Compatible
GSM/GPRS/GPS Module**

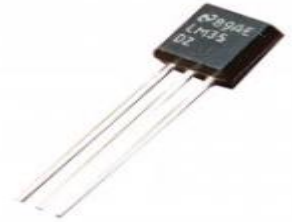
₹ 1,899.00 (inc GST)

Temperature Sensor

- LM35 – Analog Sensor
- DS18B20-DIGITAL TEMPERATURE SENSOR



DS18B20
₹95.00



LM35
₹65.00

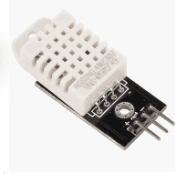
Temperature & Humidity Sensor

The only real DHT11 sensor is you can only get new data from it once every 2 seconds, so in your code please use sensor reading interval at 2 seconds or more.

This is a calibrated digital temperature and humidity module with onboard sensor DHT22 (AM2302), which features higher accuracy and a wider measuring range than DHT11.



₹ 699.00

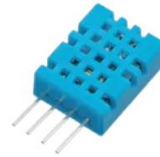


DHT22
Temperature...
₹292



DHT11
Temperature...

₹125



DHT11



DHT22

0 - 50°C / ± 2°C	Temperature Range	-40 - 125 °C / ± 0.5 °C
20 - 80% / ± 5%	Humidity Range	0 - 100 % / ± 2-5%
1Hz (one reading every second)	Sampling Rate	0.5 Hz (one reading every two seconds)
15.5mm x 12mm x 5.5mm	Body Size	15.1mm x 25mm x 7.7mm
3 - 5V	Operating Voltage	3 - 5V
2.5mA	Max Current During Measuring	2.5mA

Medical Grade Digital Temperature and Humidity Sensor

- AM2305 Digital Temperature and Humidity Sensor

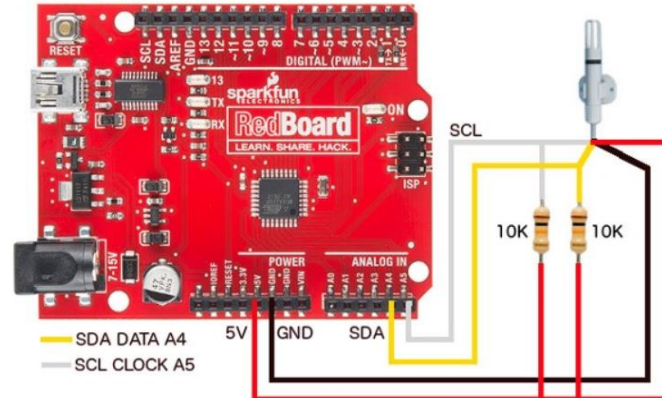
1. Voltage Rating: 5V
2. Humidity Range: 0~99.9%RH
3. Measuring Range: -40~80°C
4. Resolution: 0.1
5. Interface: Digital
6. Technology: Capacitive

Application areas:

1. Environmental monitoring
2. Ventilator / respirator
3. Anaesthesia machine
4. Spraying machine
5. Medical apparatus and instruments
6. The automatic control
7. Experimental apparatus



₹ 2,279.00



Industrial Grade-Temperature and Humidity Transmitter Modbus SHT20 Sensor XY-MD02

Features:

- 1.Support MODBUS RTU protocol
- 2.RS485 supports 1000 meters of communication
- 3.Standard DIN35 mounting rails
- 4.High precision
- 5.Industrial products, high progress SHT20 temperature, and humidity sensor, the RS485 communication
- 6.Standard MODBUS protocol and ordinary protocol, the user can choose communication protocol
- 7.Baud rate can decide for themselves
- 8.General agreement with automatic upload function, upload speed can decide for themselves

Applications:

- 1.Factory Detect
- 2.Equipment box Detect
- 3.Environmental test
- 4.Home security



₹ 919.00

Infrared Temperature sensor

MLX90614ESF-BAA-000-TU-ND is an infrared thermometer for non-contact temperature measurements. It can use with any microcontroller that can communicate with it through it's I2C interface.



LONG-DISTANCE
INFRARED
TEMPERATURE SENSOR
GY-MLX90614-DCI

₹4,200.00



MLX90614 INFRARED
NON-CONTACT
THERMOMETER

₹710.00



MLX90614ESF-BCC
CONTACTLESS
TEMPERATURE DIGITAL
IR SENSOR 3-5V I2C
COMPATIBLE WITH
ARDUINO

₹900.00

Industrial Grade Analog PH Sensor Kit

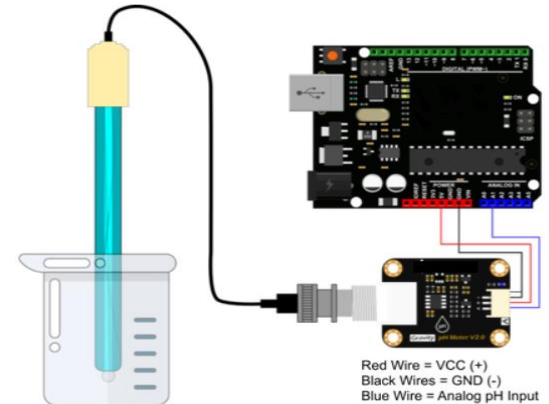
This is Industrial Grade Analog PH Sensor Kit.

A pH sensor is one of the most essential tools that's typically used for water measurements. This type of sensor is able to **measure the amount of alkalinity and acidity in water and other solutions.**

When used correctly, pH sensors are able to ensure the safety and quality of a product and the processes that occur within a wastewater or manufacturing plant.

Applications

- Water quality testing
- Aquaculture



DSM501A PM2.5 Dust Sensor Module for Arduino, Air-Conditioners

DSM501A PM2.5 Dust Sensor Module can sense that tobacco smoke and pollen, house dust, such as heating automatic suction device, adjustable resistance is set up to detect the size of the dust. Using the same as the particle counter principle as the foundation, to detect the absolute number of particles per unit volume.

Main features:

- 1.PWM output mode
- 2.Compact, lightweight
- 3.Easy to install
- 4.A single power supply

Applications:

- 1.Air purifiers and air cleaners
- 2.Air-conditioning
- 3.The air quality monitoring instrument
- 4.Air conditioning and other related products.



₹ 749.00

SHT10 Soil Temperature and Humidity Sensor Module

- The sensor includes a temperature/humidity sensor module from Sensiron in a sinter metal mesh encasing. The casing is weatherproof and will keep water from seeping into the body of the sensor and damaging it, but allows air to pass through so that it can measure the humidity (moisture) of the soil. It is designed to be submersible in water, but it's always best to avoid long-term (over 1 hour at a time) submersion, if you need something that can be submerged for over an hour you may want to find a different sensor. It can also be simply placed outside for exterior weather sensing.
- For Arduino, there's a handy [Sensiron library](#) with an example.

Features:

- 1.Relative Humidity and Temperature Measurement
- 2.Excellent Long Term Stability
- 3.Waterproof Package, and Can be Used for Measurement of Soil
- 4.Low Energy Consumption



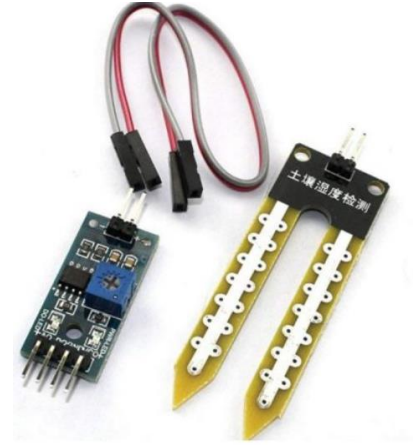
₹ 1,999.00

Soil Moisture Meter, Soil Humidity Sensor, Water Sensor, Soil Hygrometer for Arduino

The soil moisture sensor consists of two probes which are used to measure the volumetric content of water. The two probes allow the current to pass through the soil and then it gets the resistance value to measure the moisture value.

Features :

1. Dual output mode, analog output more accurate
2. A fixed bolt hole for easy installation
3. With power indicator (red) and digital switching output indicator (green)
4. Having LM393 comparator chip, stable.



₹ 69.00

SOIL MOISTURE DETECTOR SENSOR –CORROSION RESISTANT

This module is a soil moisture detector sensor module + it has corrosion resistance probe which are compatible with the Arduino..

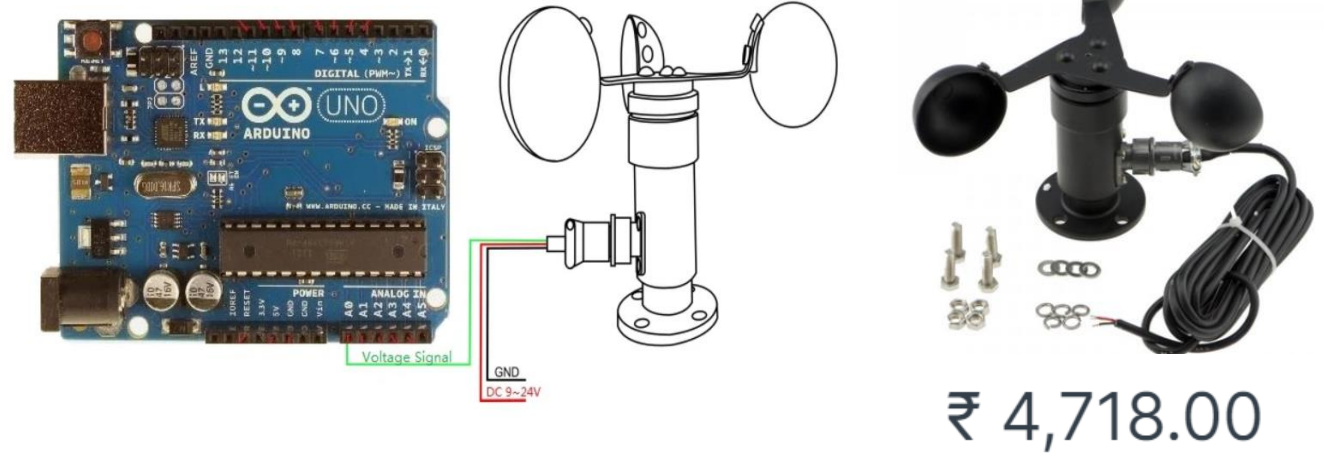
Features:

- Working voltage: 5V
- Working Current: <20ma
- Interface: Analog
- Depth of detection: 37mm
- Working Temperature: 10°C~30°C
- Arduino compatible interface
- Low power consumption
- High sensitivity
- Output voltage signal: 0~4.2V



₹413.00 (

Wind Speed Sensor Voltage Type(0-5V) Anemometer Kit (Waterproof & Industrial)



Features :

- 1.High hardness
- 2.Corrosion protection
- 3.Waterproofness
- 4.High precision

This Anemometer produce voltage Output in the range of 0 to 5 V DC according to the speed of the wind.

Flow sensor

Water Flow Sensor YF-S402B 5-24V Flowmeter 0.3-6L/Min

This is a Water Flow Sensor YF-S402B 5-24V Flowmeter 0.3-6L/Min. The 1/4 inch water flow sensor is basically a small turbine whose output signal is a series of digital pulses.

The frequency of the pulses is proportional to the flow rate of the liquid passing through the sensor.

That digital signal, whose frequency is in the range between 0Hz and 100Hz, can be read directly through one of the digital input/output pins of a microcontroller.

Applications:-

Suitable for water heater, POS terminal, Automatic water dispenser, Water Purifier, etc.



₹ 399.00

XKC-Y25 PNP Intelligent Non-Contact Water Level Sensor

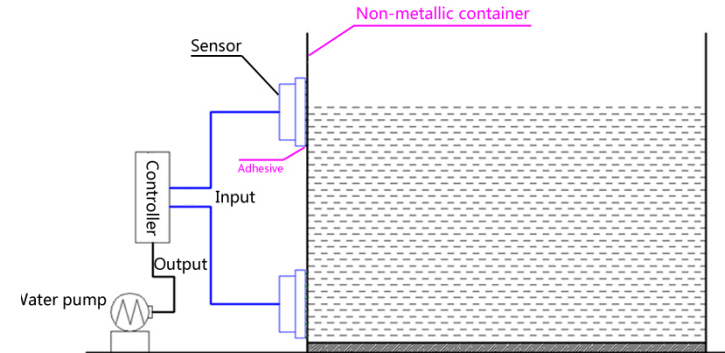


₹ 599.00

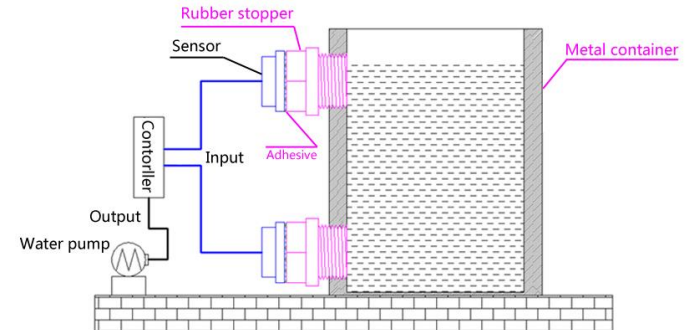
Features:

- 1.Non-Contact Detection
- 2.Easy Installation
- 3.Light Shows The Test Result
- 4.Stable Detection
- 5.High Sensitivity
- 6.Strong Anti-Interference Ability
- 7.Support Detect Various Liquids
- 8.Adjustable Sensitivity

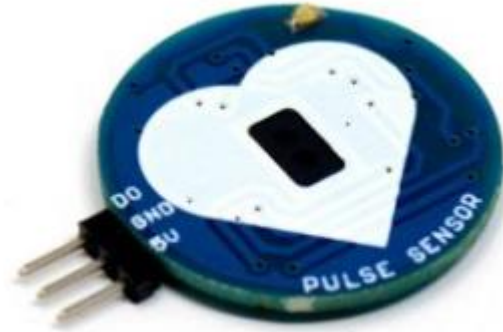
Installation method for Non-metal container



Installation method for Metal container



Pulse Sensor



₹ 230.00

Heart rate data can be really useful whether you're designing an exercise routine, studying your activity or anxiety levels, or just want your shirt to blink with your heartbeat. The problem is that the heart rate can be difficult to measure. Luckily, the Pulse Sensor can solve that problem!

The Pulse Sensor is a plug-and-play heart-rate sensor for Arduino. It can be used by students, artists, athletes, makers, and game & mobile developers who want to easily incorporate live heart-rate data into their projects.

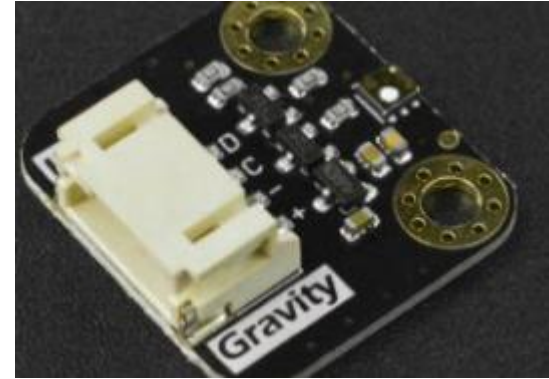
Gas Sensor

- MQ-2 = flammable gases such as LPG and propane;
- MQ-3 = ethanol;
- MQ-4 = methane (CH_4) and natural gas;
- MQ-5 = LPG and methane;
- MQ-6 = LPG and methane;
- MQ-7 = carbonic monoxide (CO)
○ and hydrogen (H_2);
- MQ-8 = hydrogen (H_2);
- MQ-131-Ozone gas detector
- MQ-135 = gaseous ammonia (NH_3), benzene,
- MQ-136-Hydrogen sulphide
- MQ-137-Ammonium sulphide
- Seed Studio Grove Oxygen Sensor (MIX8410)

SGP40 Air Quality Sensor

Applications:

- Air Purifiers
- Kitchen Hoods
- Demand-controlled Ventilation
- Thermostats
- Indoor Air Quality Monitoring



₹ 1,399.00

Distance sensor



HC-SR04-Ultrasonic
Range Finder

₹ 75.00 (inc GST)

₹ 63.56 (+18% GST extra)



MaxBotix MB1013 Ultrasonic
Sensor

SKU: 970706

☆☆☆☆☆ (0)

₹ 3,040.00 (inc GST)



MaxBotix MB7040 Ultrasonic
Sensor

SKU: 970713

☆☆☆☆☆ (0)

₹ 8,490.00 (inc GST)



TFMini-S Micro LiDAR Distance
Sensor for Drones UAV UAS

SKU: 715935

★★★★★ (4)

₹ 3,259.00 (inc GST)

An ultrasonic sensor is an **instrument that measures the distance to an object using ultrasonic sound waves.**

PIR Sensor



BM612 Digital PIR sensor

SKU: 806544

☆☆☆☆☆ (0)

₹ 129.00 (inc GST)



PIR Motion Sensor Detector
Module HC-SR501

SKU: 9251

★★★★★ (32)

₹ 69.00 ~~₹ 89.00~~ (inc GST)

A **passive infrared sensor (PIR sensor)** is an electronic [sensor](#) that measures [infrared](#) (IR) light radiating from objects in its field of view. They are most often used in PIR-based [motion detectors](#). PIR sensors are commonly used in security alarms and automatic lighting applications.



AC 220V Security PIR Human
Body Motion Sensor Detector Coil

SKU: 975701

☆☆☆☆☆ (0)

₹ 399.00 (inc GST)



Panasonic Passive Infrared (PIR)
Wall Installation Type Motion

SKU: 68483

☆☆☆☆☆ (0)

₹ 419.00 (inc GST)



RCWL-0516 Microwave Radar
Sensor

SKU: 30770

★★★★★ (4)

₹ 79.00 (inc GST)



DC 12V 24V Ceiling PIR Motion
Sensor Switch Module 3A IR

SKU: 975723

☆☆☆☆☆ (0)

₹ 299.00 (inc GST)

IMU



9 DOF IMU Sensor
MPU9250 Gyro...

₹789



ADXL335 - Triple
Axis Linear...

₹335

A digital 9 Degrees of Freedom Sensor. It comes with an onboard 3 axis accelerometer, 3 axis gyroscope, 3 axis magnetic field sensor all in one single compact board. The sensor can be interfaced through a I2C connection which allows an easy and direct interface between the sensor and a micro controller.

Applications

- 1.FPV, RC and Robots systems
- 2.GPS navigation systems
- 3.Impact recognition and logging
- 4.Gaming and virtual reality input devices
- 5.Motion-activated functions
- 6.Intelligent power saving for handheld devices
- 7.Vibration monitoring and compensation
- 8.Free-fall detection

Accelerometer



MPU6050 Triple
Axis Accelerometer
& Gyro Module

₹140.00



[INVNETO GY-291
ADXL345 3 Axis
Accelerometer...](#)

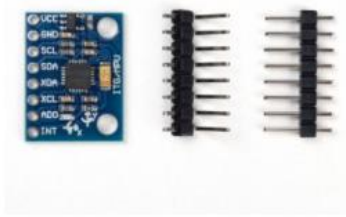
₹399.00

Accelerometer sensors are ICs that measure acceleration, which is the change in speed (velocity) per unit time.

Measuring acceleration makes it possible to obtain information such as object inclination and vibration.

The ADXL345 is well suited for mobile device applications. It measures the static acceleration of gravity in tilt-sensing applications, as well as dynamic acceleration resulting from motion or shock.

Gyroscope



MPU-6050 3-Axis Accelerometer and Gyroscope Sensor

SKU: 2846

★★★★★ (12)

₹ 239.00 (inc GST)



SeedStudio Grove 6 Axis Accelerometer & Gyroscope

SKU: 672603

☆☆☆☆☆ (0)

₹ 1,499.00 ~~₹ 1,599.00~~ (inc GST)



BMI160 6DOF 6-Axis Accelerometer Gyroscope IMU...

₹ 349.00

A gyroscope is a device used for measuring or maintaining orientation and angular velocity

Gyroscopes are used in compasses and automatic pilots on ships and aircraft, in the steering mechanisms of torpedoes, and in the inertial guidance systems installed in space launch vehicles, ballistic missiles, and orbiting satellites.

Light/color sensor



TCS34725
Color Senso...

₹389.99



TCS3200
TCS230 Col...

₹250



Adafruit
AS7341 10-...

₹1,799

Applications:

- 1.High-precision reflective color point and spectral measurements.
- 2.Fluid color, turbidity, or reagent-based constituent analysis.
- 3.Spectral power distribution and passive ambient CCT measurement for home and building automation.
- 4.High-end display color management.

Sound sensor



Waveshare Sound Sensor

SKU: 968470

☆☆☆☆☆ (0)

₹ 299.00 (inc GST)



Analog Sound Sensor
Microphone Module for Arduino

SKU: 321988

★★★★★ (2)

₹ 149.00 (inc GST)



Small Microphone Sound Sensor
Module

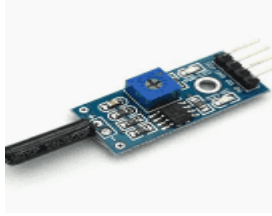
SKU: 699616

☆☆☆☆☆ (0)

₹ 59.00 (inc GST)

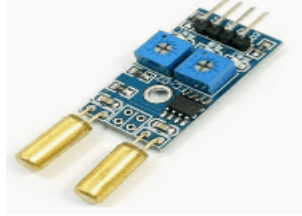
A sound sensor is defined as **a module that detects sound waves through its intensity and converting it to electrical signals**. sound sensor consists of an in-built capacitive microphone, peak detector and an amplifier (LM386, LM393, etc.) that's highly sensitive to sound.

Vibration and Tilt sensor



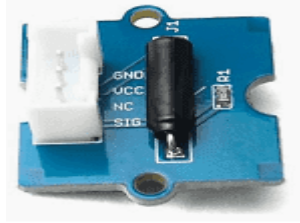
Tilt Sensor
Vibration...

₹69



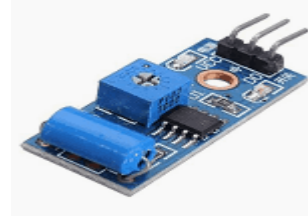
2 Channel
Tilt Sensor...

₹239



SeeedStudio
Grove Tilt...

₹57



Vibration
Sensor...

₹61

The Tilt Sensor Vibration Alarm Vibration Switch Module for Arduino come with the basic components for operation. Supplying power and it is good to be used. Attach it to object and it will detect whether the object is tilt.

Pressure sensor



[HX710B AIR PRESSURE \(0-40KPA\) SENSOR MODULE | ...](#)

₹329



Honeywell MIPAN1XX150PSAAX - Industrial Pressure Sensors
More size options

₹5,073.77 + tax (\$67.82 + tax)



[BMP180 Barometric Pressure Sensor Module from...](#)

₹57.00



Air Pressure Sensor 0-40kPa - Arduino Compatible | robokits

₹138.06



DFRobot Gravity Analog Water Pressure Sensor | Robu.in

₹1,749.00

A **pressure sensor** is a device for [pressure measurement](#) of [gases](#) or [liquids](#). Pressure is an expression of the force required to stop a fluid from expanding, and is usually stated in terms of force per unit area. A pressure sensor usually acts as a [transducer](#); it generates a signal as a [function](#) of the pressure imposed.

Load cells



50kg Half-bridge Experiments
Body Scale Load Cell Sensor

SKU: 31432

★★★★★ (1)

₹ 89.00 (inc GST)



Weighing Load Cell Sensor 1Kg
for Electronic Kitchen Scale YZC-

SKU: 28623

☆☆☆☆☆ (0)

₹ 290.00 (inc GST)



YZC-133 Weighing Load Cell
Sensor 20kg For Electronic

SKU: 28651

☆☆☆☆☆ (0)

₹ 349.00 (inc GST)

A **load cell** is a force transducer. It converts a force such as tension, compression, pressure, or torque into an electrical signal that can be measured and standardized. As the force applied to the load cell increases, the electrical signal changes proportionally.

Flex sensor



FlexiForce A201/1 Flex Sensor

SKU: 475506

☆☆☆☆☆ (0)

₹ 1,219.00 ~~₹ 1,351.00~~ (inc



SpectraSymbol Flex Sensor 4.5" Bend Sensor for Hand Gesture

SKU: 12222

☆☆☆☆☆ (0)

₹ 849.00 (inc GST)



SpectraSymbol Flex Sensor 2.2" Bend Sensor for Hand Gesture

SKU: 22341

☆☆☆☆☆ (0)

₹ 449.00 (inc GST)

This flex sensor is a variable resistor like no other. The resistance of the flex sensor increases as the body of the component bends. Sensors like these were used in the [Nintendo Power Glove](#). They can also be used as door sensors, [robot whisker sensors](#), or a primary component in creating [sentient stuffed animals](#).

Force sensor



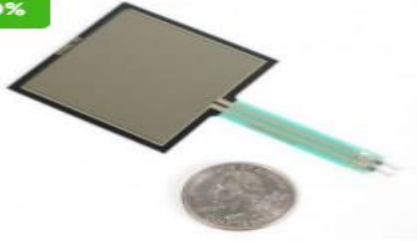
Force Sensor Resistor 0.5"
14.7mm Pressure Sensor

SKU: 12233

☆☆☆☆☆ (0)

₹ 690.00 (inc GST)

-20%



Force Sensor Resistor Square
38.1mm - Pressure Sensor

SKU: 12244

★★★★★ (1)

₹ 399.00 ~~₹ 499.00~~ (inc GST)



SeeedStudio Grove - Round Force
Sensor (FSR402)

SKU: 857204

☆☆☆☆☆ (0)

₹ 1.309.00 (inc GST)

A Force Sensor is defined as **a transducer that converts an input mechanical load, weight, tension, compression or pressure into an electrical output signal** (load cell definition). Force Sensors are also commonly known as Force Transducer.

Force sensors are responsible for measuring the force acting on an object.

Current Sensor



20A Range Current Sensor Module ACS712

SKU: 23911
☆☆☆☆☆ (0)

₹ 149.00 (inc GST)



5A range of single-phase AC current sensor module

SKU: 28369
★★★★★ (2)

₹ 149.00 (inc GST)
₹ 126.27 (+18% GST extra)

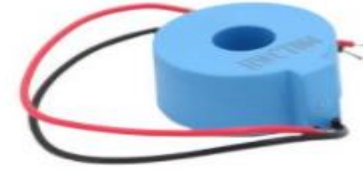


SCT-013-060 Non-invasive AC Current Sensor Clamp Sensor

SKU: 618494
☆☆☆☆☆ (0)



₹ 549.00 (inc GST)
₹ 465.25 (+18% GST extra)



HWCT004 Micro Precision Current Transformer 50A / 50MA

SKU: 975774
☆☆☆☆☆ (0)

₹ 469.00 (inc GST)



WCS1700 Hall Current Sensor with Over Current Protection

SKU: 766394
☆☆☆☆☆ (0)

₹ 1,139.00 (inc GST)

A current sensor is a device that detects electric current in a wire and generates a signal proportional to that current. The generated signal could be analog voltage or current or a digital output.

Voltage sensor



AC Voltage Sensor Module
ZMPT101B (Single Phase)

SKU: 699520

★★★★★ (1)

₹ 219.00 (inc GST)



Voltage Detection Sensor Module
25V

SKU: 29802

★★★★★ (4)

₹ 79.00 (inc GST)

A voltage sensor is a **sensor used to calculate and monitor the amount of voltage in an object**. Voltage sensors can determine the AC voltage or DC voltage level.

Hall sensor



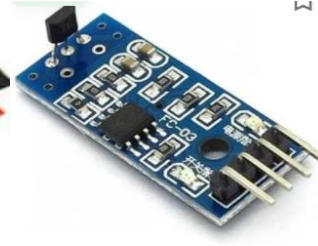
Hall Effect Sensor
Module from
ElectronicsComp.com

₹57.00



[KY-024 Linear
Magnetic Hall Effect
Sensor Module...](#)

₹49.00



Hall Effect Sensor Module from
ElectronicsComp.com

₹57.00

The Hall-effect Sensor is **able to distinguish between the positive and negative charge moving in opposite direction**. The magnetic field detected by the hall-effect sensor is converted to the suitable analog or digital signal that can be read by the electronic system, usually a motor control system.

A **Hall effect sensor** (or simply **Hall sensor**) is a type of [sensor](#) which detects the presence and magnitude of a [magnetic field](#) using the [Hall effect](#).

Ultrasonic sensor



Ultrasonic
Distance...

₹62



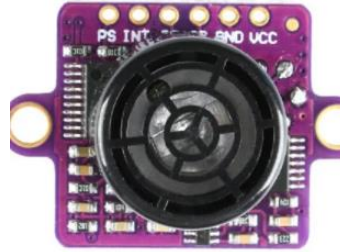
HC-SR04
HCSR04...

₹63



Waterproof
Ultrasonic...

₹450



GY-US42 Ultrasonic Long Range
Distance Sensor for Arduino &
APM

₹1,399.00

- An ultrasonic sensor is an instrument that measures the distance to an object using ultrasonic sound waves.

Proximity sensor



**Autonics CR18-8DN DC10~30
8mm M18 Capacitive Proximity**

SKU: 642326

☆☆☆☆☆ (0)

₹ 1,169.00 ~~₹ 2,018.00~~ (inc. GST)



**Autonics PR12-2DN DC10~30
2mm M12 Inductive Proximity**

SKU: 642317

☆☆☆☆☆ (0)

₹ 449.00 ~~₹ 769.00~~ (inc GST)



**E18-D80NK Mini Adjustable
Infrared Sensor Switch 3-80cm**

SKU: 825938

☆☆☆☆☆ (0)

₹ 189.00 (inc GST)

₹ 160.17 (+18% GST extra)



**SN04-N NPN NO 5mm Distance
Detector Proximity Sensor Switch**

SKU: 52059

★★★★☆ (1)

₹ 240.00 (inc GST)



**DC 6-36V M17 Inductive 8mm
NPN-NO Proximity Sensor Switch**

SKU: 261503

★★★★★ (3)

₹ 250.00 (inc GST)

- We offer a wide variety of highly accurate, low-power Proximity Sensor.
- It includes inductive, capacitive cylindrical proximity sensors which range 2-15mm.
- An advantage with these sensors is that they are capable of detecting both metallic and non-metallic targets whose dielectric constant is more than that of air

Rotary Encoder

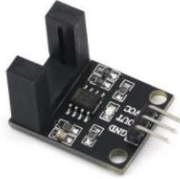


Correlation Photoelectric Infrared
Count Slot Sensor Module 10 mm

SKU: 835790

☆☆☆☆☆ (0)

₹ 149.00 (inc GST)



Correlation Photoelectric Infrared
Count Slot Sensor Module 15 mm

SKU: 863443

☆☆☆☆☆ (0)

₹ 165.00 (inc GST)



DE-775 Hall Effect Two Channel
Magnetic Encoder

SKU: 302048

☆☆☆☆☆ (0)

₹ 270.00 (inc GST)



SUNX PM-L44 U-slot type Small
Photoelectric Sensor

SKU: 766388

☆☆☆☆☆ (0)

₹ 619.00 (inc GST)



Orange 600 PPR ABZ 3-Phase
Incremental Magnetic Rotary

SKU: 232566

☆☆☆☆☆ (0)

₹ 2,890.00 (inc GST)

A rotary encoder is a type of position sensor which is used for determining the angular position of a rotating shaft. It generates an electrical signal, either analog or digital, according to the rotational movement.

A rotary encoder is **a type of position sensor**, they measure rotary movements and displacement and can either be absolute or incremental. A rotary encoder is an electromechanical feedback device used to provide information on position, speed, count or direction

RFID Cards and Tags



RFID Reader/Writer
RC522 SPI S50 wit...

₹132



RFID Sticker Coin
Type Tag 25mm...

₹45



RC522 RFID Card Reader Module
13.56MHz

SKU: 311636

☆☆☆☆☆ (0)

₹ 119.00 (inc GST)

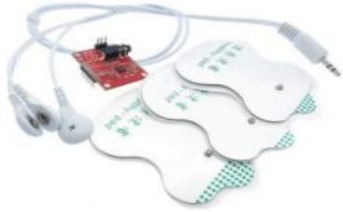


RFID tags are a type of tracking system that uses radio frequency to search, identify, track, and communicate with items and people.

BIO SIGNALS

- ECG– ElectorCardio Graphy
- EMG –Electromyo graphy
- EEG–ElectroEnchepahlogrphy
- EOG–Electroocular graphy
- GSR–Galvanic skin response
- EGG–Electrogastography
- ERG–Electro retinography

ECG



ECG Module AD8232 Heart ECG
Monitoring Sensor Module Kit for

SKU: 43190

☆☆☆☆☆ (0)

₹ 1,190.00 (inc GST)



Advance Technologies EMG
Muscle Sensor V3.0 With Cable

SKU: 261834

☆☆☆☆☆ (0)

₹ 2,049.00 (inc GST)



An electrocardiogram (ECG) is a simple test that can be **used to check your heart's rhythm and electrical activity**. Sensors attached to the skin are used to detect the electrical signals produced by your heart each time it beats.

EMG



EMG Muscle Sensor
Module V3.0 with Ca...

₹1,575



Advance Technologies
EMG Muscle Sensor...

₹2,049

Electromyography (EMG) sensor is **an electrodiagnostic medicine technique for evaluating and recording the electrical activity produced by skeletal muscles**

EEG



Open BCI(Rs 45000)



Brain sense(Rs 6999)



Emotiv(Rs 52000)

Blood pressure



Blood Pressure Sensor - Serial output



Bluetooth Blood Pressure Monitor

The Blood Pressure Sensor is a non-invasive sensor designed to measure human blood pressure. It measures systolic, diastolic and mean arterial pressure utilizing the oscillometric method.

Pulse oximeter



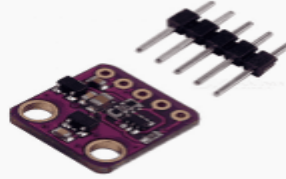
MAX30100
Pulse Oximeter...

₹160



Pulse Sensor |
Robu.in

₹230



Max30102 Pulse
Oximeter Hear...

₹599

A pulse oximeter is a [medical device](#) that indirectly monitors the oxygen saturation of a patient's [blood](#) (as opposed to measuring oxygen saturation directly through a blood sample) and changes in blood volume in the skin, producing a [photoplethysmogram](#) that may be further processed into [other measurements](#).

Biometric sensors



Finger Print
Sensor...

₹925



Iris Sensor



Palm print sensor



Face & finger print

Reference Websites for Purchase

- <https://www.libelium.com/> (spain)
- <https://www.seeedstudio.com/> (china)
- <https://www.winsen-sensor.com/> (china)
- Robokits.co.in (India)
- Robu.in (India)
- Sunrom.com(india)
- sparkfun.com
- <https://www.cooking-hacks.com/>
- Digikey.com
- Mouser.com

Questions and Answers



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Thank you