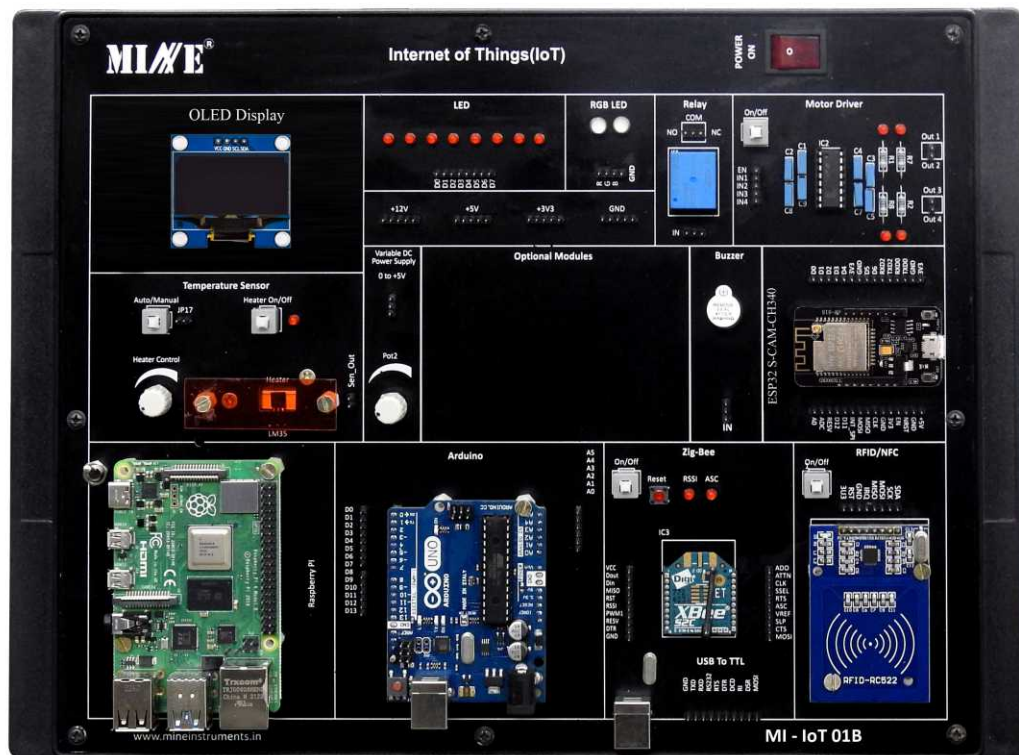




In the simplest terms, the Internet of Things (IoT) is how we describe the digitally connected universe of everyday physical devices. These devices are embedded with internet connectivity, sensors and other hardware that allow communication and control via the web. IoT trainer comes along with various types of sensors, actuator and processing unit gives a great exposure to learners and professionals for interfacing electronic entities to real word.



Supporting IOT & Operating System

- Windows
- Linux
- Arduino

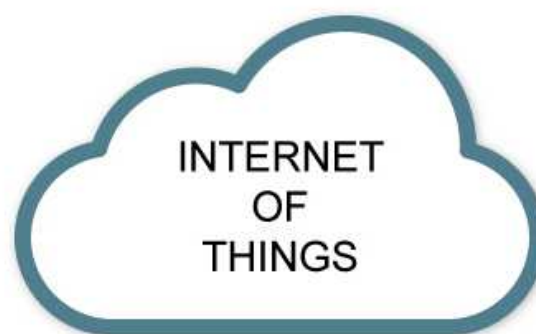


Features

- In-depth practical learning on IoT
- UART RS232, I2C, SPI Protocol interface
- Python Programming for Applications
- Adequate no. of Digital & Analog I/O's for Interfacing Sensor & Actuators
- OLED Display
- IoT Gateway using Wi-Fi
- Camera connectivity
- Arduino board interface
- Connectors for external module interface
- HDMI interface for display
- GSM IoT gateway (optional)
- Bluetooth interface (optional)
- Zigbee interface (optional)

More than 50 types of sensor come along with kit provides in-depth knowledge and hands-on practice on interfacing & programming microcontrollers.

Applications



Learning's

1. Familiarization with Arduino/Raspberry pi & perform necessary software installation.
2. To interface LED/Buzzer with Arduino/ Raspberry pi & write a program to turn ON LED for 1sec after every 2 Seconds.
3. To interface Push button /Digital sensor (IR /LDR) with Arduino /Raspberry pi & write program to turn ON LED when Push Button is pressed or at sensor detection.
4. Interface DHT-11 sensor with Arduino /Raspberry pi & write program to print Temperature & Humidity readings.
5. To Interface Motor using relay with Arduino /Raspberry pi & write program to turn ON motor when push button is pressed.
6. Write program for RGB LED using Arduino.
7. Study the LCD & write program for "Hello world".
8. Study the Temperature sensor & write program for monitor temperature Arduino.
9. Study of Serial Communication using LED output.
10. Study the Implement Zigbee wireless Communication Protocol.
11. Study the application of Zigbee protocol using Arduino.
12. Study the Implement RFID, NFC using Arduino.
13. Study of Node MCU ESP8266/ESP32.
14. Study about MQTT Protocol.
15. Implementation of Home Automation System using MQTT.
16. Raspberry Pi with GPIO.

Technical Specifications

On Board Computing Devices

Raspberry Pi board Specification

Processor	: 64bit ARMv7 Quad Core Processor 1.2GHz
Connectivity	: 802.11 b/g/n Wireless LAN Bluetooth 4.1, zigbee, USB & Ethernet
RAM	: 4GB
Memory	: 32GB (upgradable)
OS	: Linux
Ethernet	: 10/100 BaseT Ethernet socket
Video Output	: HDMI and Composite RCA
Audio Output	: Audio Output 3.5mm jack
USB	: 4 nos.



Note: Raspberry Pi specification are subject to change and may be higher specification raspberry pi board come along with trainer.

Input & Output Devices

Motor Driver	: Stepper and DC Motor
Analog Input	: 6 nos.
Relay Output	: 1 no.
Buzzer Output	: 1 no
Zigbee Module	: 1 no
Zigbee Frequency	: 2.4GHz
Power	: 5V,2A

Arduino board specifications

Microcontroller	: ATmega328
Operating Voltage	: 5V
Digital I/O Pins	: 14 (of which 6 provide PWM output)
Analog Input Pins	: 6
Flash Memory	: 32 KB including bootloader
SRAM	: 2 KB (ATmega328)
EEPROM	: 1 KB (Atmega328)
Clock Speed	: 16 Mhz



Note: Arduino specification are subject to change and may be higher specification Arduino board come along with trainer.

ESP32 Development Board (Onboard)



Technical Specifications

Input Voltage (Volt)	: 5V(USB)
Microprocessor	: 32-bit LX6 with clock frequency up to 240 MHz.
SRAM	: 520 KB
ROM	: 448 KB
RTCSRAM	: 16 KB.
Wi-Fi connectivity	: 802.11 b/g/n Wi-Fi connectivity with speeds up to 150 Mbps.
Bluetooth	: Classic Bluetooth v4.2 and BLE .
GPIO	: 34 Programmable GPIOs.
Communicataion	: Serial Connectivity include 4 x SPI, 2 x I2C, 2 x I2S, 3 x UART.
PWM:	: upto 16-channels.

Cryptographic Hardware Acceleration for AES, Hash (SHA-2), RSA, ECC and RNG.

Note: ESP32 specification are subject to change depend on availability.

Onboard DC Power Supply • +5VDC, +12VDC • Variable 0 to +5VDC

OLED Display

Technical Specifications(1.2 inch Display)

Operating Voltage	: 3.3V-5V DC
Interface type	: I2C interface
Display Color	: Blue
High Resolution	: 128 x 64
Driver IC	: SH1106
Display Area	: 29.42 x 14.7mm



Sensor & Actuator

- LED's
- RGB Color
- Relay
- Motor Driver
- Temperature Sensor LM35
- Heater (inbuilt)
- Xbee (optional)

Accessories



Motor



Power Cable



HDMI to VGA Adaptor



Micro USB B-Type Cable



Micro HDMI to HDMI Adaptor



User Manual



RFID Card



Connecting Cable M-F & F-F



USB Cable B-Type



Xbee Board (optional)

Sensors



MQ-2
Combustible Gas, Smoke
Sensor



MQ-3
Alcohol Sensor



MQ-4
Methane, Propane, Butane
Sensor



MQ-5
Liquefied Gas & Coal
Gas Sensor



MQ-6
Isobutene Propane Gas
Sensor



MQ-7
Carbon Monoxide Sensor



MQ-8
Hydrogen Sensor



MQ-9
Carbon Monoxide,
Methane Sensor



MQ-135
Air Quality & Hazardous
Gas Sensor



Soil Module



Infrared Sensor
Receiver Module



Laser Head Sensor
Module



Temperature and Humidity
sensor Module



Infrared Emission
sensor Module



5V Relay Module



Gyro Module



Arduino finger detect
heartbeat module



Microphone Sensitivity
Sensor Module



Metal Touch sensor
Module



Flame Sensor
Module



3-color LED module



Hunt sensor module



Linear Magnetic
Hall Sensor



Rotary Encoder
module



Active Buzzer
Module



Magic Light Cup
Module



Small Passive Buzzer
Module



Digital Temperature
sensor module



Tilt Switch Module



Analogy Hazardous
Magnetic Sensor



Ultrasonic Module



Mercury Opening
Module



Hall Magnetic
Sensor Module



RGB LED SMD
Module



Arduino hit sensor
module



Bicolor LED common
Cathode Module 3MM



Obstacle sensor Module



Key Switch Module



Photo-resistor
module



Bread board Power
Module



Arduino Hit Sensor
Module



Temperature sensor
Module



Vibration Switch
Module



Microphone Sound
Sensor Module



Large Reed
Module



Two color LED
Module



Optical Breaking
Module



Temperature Sensor
Module



MP1584EN Buck
module



SD Card reader
module



Arduino PS2 Joystick game
controller Module



DS1302 Clock
Module



Water Level Module

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