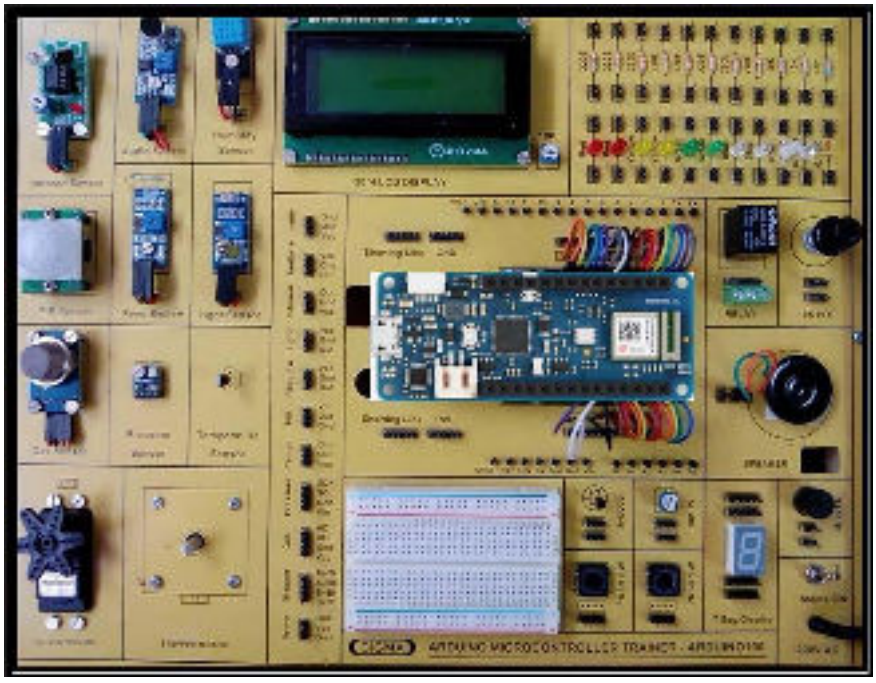
ARDUINO MKR1310 LORAWAN

MICROCONTROLLER TRAINER

MODEL-ARDUINO-MKR1310



This trainer has been designed with a view to provide practical and experimental knowledge of Internet of Things (IOT) with Sensors programing with Arduino MKR1013 LoraWAN IOT Board.

SPECIFICATIONS

A. Main Specs

1. Following Parts and Modules are assembled on Single PCB of size - 18 Inch x 15 Inch.
2. The complete circuit diagram is screen printed on component side of the PCB with circuit and Parts at the same place.
3. The PCB with components on front side is fitted in elegant wooden box having lock and key arrangement.
4. Modules and Parts should be removable without desodlering for easy repair / replacement
5. The acrylic cover is fitted on PCB to safeguard main parts.

B. Arduino MKR1013 LoraWAN Microcontroller Board

1. The Arduino MKR WAN 1310 board provides a practical and cost effective solution to add LoRa® connectivity to projects requiring low power. This open source board can be connected to: the Arduino IoT Cloud, your own LoRa® network using the Arduino LoRa® PRO Gateway, existing LoRaWAN™ infrastructure like The Things Network, or even other boards using the direct connectivity mode.
2. MCU: Microcontroller SAMD21 Cortex®-M0+ 32bit low power ARM MCU
3. CPU Flash Memory 256 KB (internal)
4. QSPI Flash Memory 2MByte (external)
5. SRAM 32 KB
6. Clock Speed 32.768 kHz (RTC),
7. 48 MHz
8. Circuit Operating Voltage 3.3V
9. Digital I/O Pins 8
10. PWM Pins 13 (0 .. 8, 10, 12, 18 / A3, 19 / A4)
11. Analog Input Pins 7 (ADC 8/10/12 bit)
12. Analog Output Pins 1 (DAC 10 bit)
13. UART, SPI, I2C
14. Antenna gain 2dB (bundled pentaband antenna)
15. Lora Carrier frequency 433/868/915 MHz

C. Sensors:

1. Air Humidity and Temperature DHT11
2. Air Quality - MQ135
3. Soil / Water Temperature Sensor - DS18B20
4. Leaf Wetness Sensor - Rain Detector Sensor
5. Soil Moisture Sensor
6. Ambient Light Sensor - LDR Light Sensor

D. Modules and Hardware:

1. 20 X 4 - LCD Display
2. 1 Channel Relay board
3. DC Motor with Motor Driver board
4. Stepper Motor with Motor Driver board
5. 7 Segment Display
6. Different Resistors
7. Red, Green, Yellow LED
8. 10K Pot
9. Push Switch – 2 Nos
10. Audio Buzzer Board
11. Breadboard - 400 Points
12. 2 mm interconnection Sockets

E. Accessories

1. USB to Square USB Cable : 1 No
2. 2 mm Banana Jack Jumper – Connectors : 30 Nos
3. 9V, 1A Power Adaptor – Barrel 2.1mm : 1 No
4. Pen Drive - 16 GB with All Codes : 1 No
5. Printed Manual : 1 No.
6. Softcopy of Manual – On Pen Drive : 1 No
7. E-Books for IOT Subject – On Pen Drive : 10 Nos. in PDF Format
8. Mp4 Video for IOT Subject – On Pen Drive : 40 Nos

EXPERIMENTS

1. To understand theory and working of Arduino MKR1013 LoraWAN Board
2. To understand Operating System for Arduino MKR1013 LoraWAN Board
3. To understand Communication Protocols
4. To understand USB Interface for Arduino MKR1013 LoraWAN Board
5. To understand that how to connect 20 x 4 LCD Display to Arduino MKR1013 LoraWAN Board

6. To understand theory of Air Humidity and Temperature DHT11
7. To understand theory of Air Quality - MQ135
8. To understand theory of Soil / Water Temperature Sensor
9. To understand theory of Leaf Wetness Sensor - Rain Detector Sensor
10. To understand theory of Soil Moisture Sensor
11. To understand theory of Air Ambient Light Sensor - LDR

12. To understand Active Audio Buzzer
13. To understand 1 Channel Relay Board
14. To understand fundamental of DC motor and its driver
15. To understand fundamental of Stepper Motor and its driver

16. To make LED blink
17. To connect LCD Display
18. To measure Humidity using Humidity - DHT11 Sensor
19. To measure Air Humidity and Temperature using DHT11 Sensor
20. To measure Air Quality using Air Quality Sensor
21. To measure Temperature of Soil using Soil Temperature Sensor - DS18B20
22. To measure wetness of Leaf using Leaf Wetness Sensor - Rain Detector Sensor
23. To measure Moisture of soil using Soil Moisture Sensor
24. To measure Ambient Light using LDR Light Sensor

25. To use Audio buzzer for Output signal Alarm
26. To control 1 Channel Relay
27. To operate DC Motor control
28. To operate Stepper Motor

29. To send Sensors data from Transmitter Node to Base Receiver using LoRaWAN Gateway
30. To send Sensors data from Transmitter Node to LoRaWAN Cloud Server
31. To export Sensors data from LoRaWAN Cloud Server to xls file
32. To analyse, monitor and Draw Graph of Sensors Data using Smart Dashboard Remotely

Contact us

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