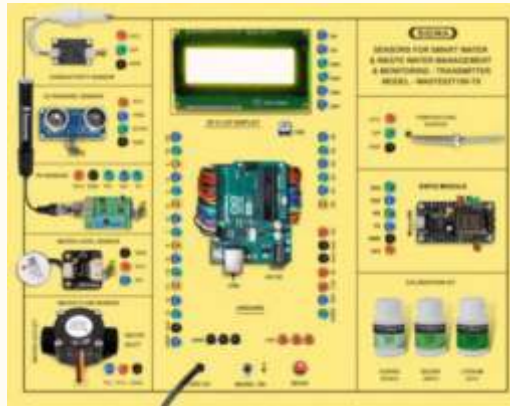




SENSORS FOR SMART WATER & WASTE WATER MANAGEMENT & MONITORING MODEL-WASTEIOT100

This trainer has been designed with a view to provide practical and experimental knowledge Sensors programming for Smart Water & Waste Water Management & Monitoring with Arduino IOT Board.



SPECIFICATIONS

1. Hardware

Following Parts and Modules are assembled on Single PCB of size - 18 Inch x 15 Inch

1. Arduino Microcontroller Board

1. Arduino Uno Microcontroller board based on the ATMEGA328P
2. 14 Digital Input / Output pins (of which 6 provide PWM output)
3. 16 MHz Ceramic Resonator
4. USB Port
5. Power Jack – 9V DC, 1A

2. Sensors & Other Components

1. Water Conductivity Sensor
2. PH Sensor
3. Water Level Sensor
4. Water Flow Sensor
5. Ultrasonic Displacement Sensor
6. Temperature Sensor RTD100
7. Cupric (Cu²⁺), Silver (Ag⁺), Lithium (Li⁺) 10, 100 & 1000 ppm solution Calibration kit

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Dealer:-

3. Modules and Hardware:

1. 20 X 4 - LCD Display
2. ESP32 Wifi Module
3. 2 mm interconnection Sockets

4. Application Software

1. Smart Dashboard for remote monitoring and analysis

2. Accessories

1. USB Cable : 2 No
2. Ethernet Cable : 1 No
3. Micro USB to USB cable for ESP32 : 1 No
4. Power Supply Adaptor : 9V DC, 1A
5. Jumper wires : 50 Nos.
6. Pen Drive with Software, Library, Driver,
Codes, Soft Copy of Manual and Mobile App : 16 GB
7. Printed Practical Manual : 1 No.
8. E-Books for IOT Subject : 10 Nos. in PDF Format
9. Mp4 Video Class for IOT Subject : 40 Nos
10. Excitation accessories for each sensor
Distilled water to test TDS
Various pH solutions

3. Cabinet and PCB

The complete circuit diagram is screen printed on component side of the PCB with circuit and Parts at the same place. The PCB with components on front side is fitted in elegant wooden box having lock and key arrangement. The acrylic cover is fitted on PCB to safeguard parts. It works on 230 V AC Supply.

EXPERIMENTS

A. Theory Experiments for Arduino Board

1. To understand theory and working of Arduino Operating software.
2. To understand Pin and Connection Diagram of Arduino.
3. To understand USB Interface for Arduino.
4. To understand 20 x 4 LCD Display.

B. Theory of ESP32 Wireless Module

5. To understand theory and working of ESP32
6. To understand Operating System for ESP32
7. To understand Pin and Connection Diagram of ESP32
8. To understand USB Interface for ESP32

C. Theory Experiments for Sensors

9. To understand theory of Water Conductivity Sensor
10. To understand theory of PH Sensor
11. To understand theory of Water Level Sensor
12. To understand theory of Water Flow Sensor
13. To understand theory of Ultrasonic Displacement Sensor
14. To understand theory of Temperature Sensor RTD100
15. To understand theory of Cupric (Cu^{2+}), Silver (Ag^+), Lithium (Li^+) Sensors with 10, 100 & 1000 ppm solution Calibration

D. Practical Experiments

16. To measure the Water Conductivity using Conductivity Sensor
17. To measure Water PH value using pH sensor
18. To measure Water Level using Water Level sensor
19. To measure Water Flow using Water Flow Sensor
20. To measure Distance of the object using Ultrasonic Sensor
21. To measure temperature using RTD Temperature Sensor
22. To measure PH value of Cupric, Silver and Lithium Solution

E. Server, Cloud Configuration, IOT Gateway, Nodes and Mobile App Experiments

23. To send Sensors data using Wifi Wireless Node to Main Base IOT Receiver
24. To send and display Sensors Data in a server Web Page using HTTP, Java and PHP Code
25. To send Sensors data to website webpage and store them into MySQL Server
26. To receive and show Sensors data on Android based Mobile App
27. To send and display Sensors Data on website Smart Dashboard on a server