SOLAR WATER PUMP TRAINER
MODEL-SOLARPUMP100

This trainer has been designed with a view to provide practical and experimental knowledge Sensors programing for IoT based Solar Pump 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. Flash Memory : 16KB (of which 2KB used by boot loader)
5. USB Port
6. Power Jack – 9V DC, 1A

2. Solar Pump Hardware:

1.	1 HP Solar Panel	: 40W (36Nos)
2.	Power Supply Battery	: 12 V / 26 AH
3.	Solar Charger with 400 to 700V DC MPPT	
4.	Pump Operating Frequency	: 30Hz to 50Hz
5.	Pump Protection	: Dry Run, Short Circuit
6.	Pump Maximum PV Voltage	: 750V DC
7.	Remote Operation through GSM module	

Sigma Trainers and Kits
E-113, Jai Ambe Nagar,
Near Udgam School,
Thaltej,
AHMEDABAD - 380054.
INDIA.

Phone(O): +91-79-26852427
Phone(F): +91-79-26767512
Mobile : +91-9824001168
Email : sales@sigmatrainers.com
: drluhar@gmail.com
Web : www.sigmatrainers.com

Dealer:-

3. Modules and Hardware:

1. 20 X 4 - LCD Display
2. ESP32 Wifi Module
3. GSM Module : 2.4 Ghz
4. 2 mm interconnection Sockets

2. Accessories

1.	USB Cable	: 1 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 Derive with Software, Library, Driver, Codes, Soft Copy of Manual and Mobile App	: 16 GB
7.	Printed Practical Manual	: 1 No
8.	Inlet and Outlet Pipes for Water Pump	: 2 Nos
9.	E-Books for Agriculture IOT Subject	: 10 Nos. in PDF Format
10.	Mp4 Video Class for IOT Subject	: 40 Nos
11.	Excitation accessories for each sensor Buckets as Underground Water tank and Upper Water Tank	: 2 Nos

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 Pump Hardware

9. To understand theory and working of Solar Panel
10. To understand theory and working of Solar Charger
11. To understand theory and working of DC Monoblock Water Pump
12. To understand theory and working of DC Battery
13. To understand Dry Run and Short Circuit of Water Pump
14. To understand Theory of GSM module

D. Practical Experiments

15. To implement demo of Water Pump to uplift water on upper tank of a home using Water pump using solar energy
16. To charge Battery for water pump using Solar Panel
17. To control Dry Run and Short Circuit of Water Pump
18. To control overcharging of a Battery for of Water Pump
19. To control Pump ON / OFF remotely from anywhere using GSM Network via Android Mobile
20. To control Pump ON / OFF remotely from anywhere using website and server