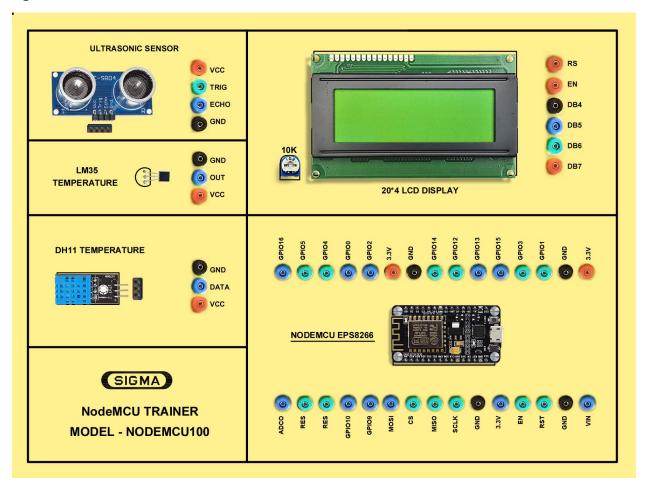# NODEMCU ESP8266 MICROCONTROLLER TRAINER

MODEL - NODEMCU100

This trainer has been designed with a view to provide practical and experimental knowledge of NodeMCU EPS8266 Micro controller.

ULTRASONIC SENSOR

- VCC
- TRIG
- ECHO
- GND

LM35 TEMPERATURE

- GND
- OUT
- VCC

DH11 TEMPERATURE

- GND
- DATA
- VCC

SIGMA

NodeMCU TRAINER
MODEL - NODEMCU100

20*4 LCD DISPLAY

10K

- RS
- EN
- DB4
- DB5
- DB6
- DB7

GPIO16 | GPIO5 | GPIO4 | GPIO0 | GPIO2 | 3.3V | GND | GPIO14 | GPIO12 | GPIO13 | GPIO15 | GPIO3 | GPIO1 | GND | 3.3V

NODEMCU EPS8266

ADCO | RES | RES | GPIO10 | GPIO9 | MOSI | CS | MISO | SCLK | GND | 3.3V | EN | RST | GND | VIN

SPECIFICATIONS

1. Hardware

Following Parts and Modules are assembled on Single PCB of size - 12 "x 9"

1. NODEMCU EPS8266 Board

1. Microcontroller Tensilica 32-bit RISC CPU Xtensa LX106
2. Operating Voltage : 3.3V
3. Input Voltage: 7-12V
4. Digital I/O Pins (DIO): 16
5. Analog Input Pins (ADC): 1
6. UARTs : 1
7. SPIs : 1
8. I2Cs : 1
9. Flash Memory : 4 MB
10. SRAM : 64 KB
11. Clock Speed : 80 MHz

2. Sensors:

1. Ultrasonic Distance Sensor
2. Temperature & Humidity Sensor – DTH11
3. Temperature Sensor LM35

3. Modules and Hardware:

1. 20 X 4 - LCD Display with I2C Plugin Board
2. LEDs and Different Resistors
3. Breadboard - 400 Points for testing different Sensors and circuits

2. Accessories

1. USB A to B cable   : 2 No
2. Ethernet Cable   : 1 No
3. Male to Male Connecting Wires   : 20 Nos.
4. Female to Female Connecting wires   : 20 Nos.
5. Male to Female Connecting Wires   : 20 Nos
6. Power Supply Adaptor   : 3.3 V DC,12A
7. Pen Derive with Software, Library, Driver,
   Codes, Soft Copy of Manual   : 16 GB
8. Printed Practical Manual   : 1 No.
9. E-Books for IOT Subject   : 10 Nos. in PDF Format
10. Mp4 Video Class for IOT Subject   : 40 Nos
11. Excitation accessories for each sensor

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

1. To understand theory and working of NODEMCU EPS8266.
2. To understand theory and working of Ultrasonic Sensor
3. To understand theory and working Temperature & Humidity Sensor DTH11
4. To understand theory and working Temperature Sensor LM35
5. To understand 20 x 4 LCD Display
6. To connect Arduino to 20 x 4 LCD Display.

B. Practical Experiments

1. To determine the distance of a nearby object using ultrasonic sensor and show it in 20x4 LCD
2. To determine temperature and humidity sensor using DHT11 and show it in 20x4 LCD
3. To determine the environment temperature using LM35 sensor and show it in 20x4 LCD