



This trainer has been designed with a view to provide practical and experimental knowledge of Wireless Internet of Things (IOT) with GPS Module with Arduino 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 desoldering for easy repair / replacement
5. The acrylic cover is fitted on PCB to safeguard main parts.

B. Arduino Microcontroller Board

1. ATmega328P Processor - AVR CPU at up to 16 MHz
2. 8 Bit AVR® RISC Based microcontroller
3. Memory : 32KB Flash, 2KB SRAM, 1KB EEPROM
4. Power On Reset (POR)
5. 2 x 8 Bit Timer/Counter
6. 1 x 16-bit Timer/Counter
7. USART, SPI, I2C
8. PWM Channels : 6 Nos.
9. Digital Input / Output pins : 14 Nos (of which 6 provide PWM output)
10. 16 MHz Ceramic Resonator
11. USB Port
12. Power Jack – 9V DC, 1A

C. Modules

GPS Module

- | | |
|-------------------------|--|
| 1. Channel | : 12 |
| 2. Frequency | : L1 C/A |
| 3. Position Accuracy | : 25 meters CEP without SA |
| 4. Velocity Accuracy | : 0.1 meters/second, without SA |
| 5. Time Accuracy | : Synchronized to GPS time |
| 6. Update Rate | : 1/sec |
| 7. Receiver Sensitivity | : -175 dB |
| 8. Input Voltage | : +5V DC |
| 9. Serial Communication | : 4800 Baud (default) |
| 10. Protocol Messenger | : NMEA0183V2.2, SIRf binary & RTCMSC |
| 11. Speed | : 104V2.0 type 1,2,9, 515 meters/sec. (max.) |
| 12. Maximum Altitude | : 1800 meters |
| 13. Time to First Fix | : 45 / 38/ 8 Sec |

D. Hardware:

1. 20 X 4 - LCD Display
2. LEDs and Different Resistors
3. 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 Board
2. To understand Operating System for Arduino Board
3. To understand Communication Protocols
4. To understand USB Interface for Arduino Board
5. To understand that how to connect 20 x 4 LCD Display to Arduino Board
6. To understanding concept of GPS
7. To establish Link between GPS Satellite & GPS Module
8. To measure of Latitude & Longitude of a given place
9. To study Effect of DOP.
10. To study HDOP & VDOP.
11. To analyse NMEA 0183 Protocols
12. To analyse Elevation; Azimuth, SNR.
13. To study PRN Code
14. To study Common NMEA Sentence Protocol like, GPGGA, GPGLL, GPGSA, GPGSV, GPRMC

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