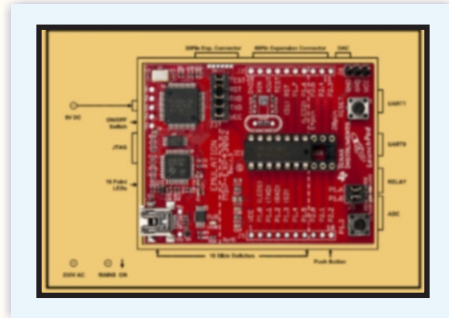# MSP430 MICRO CONTROLLER TRAINER

MODEL - MSP430

SIGMA

This trainer has been designed with a view to provide theoretical & practical knowledge of MSP430 Micro controller board.

FEATURES

* USB debugging and programming interface featuring a driverless installation and application UART serial communication with up to 9600 Baud
* Two general-purpose digital I/O pins connected to green and red LEDs for visual feedback
* Two push button for user feedback and device reset
* Easily accessible device pins for debugging purposes or as socket for adding customized extension boards
* High-quality 20-pin DIP socket for an easy plug-in or removal of the target device

SPECIFICATIONS

Hardware
1. LaunchPad emulator socket board (MSP-EXP430G2)
2. Mini USB-B cable, 0.5 m
3. MSP430 flash-based MCUs
   – MSP430G2553: Low-power 16-bit MSP430 microcontroller with an 8-channel 10-bit ADC, on-chip comparator, touch-sense enabled I/Os, universal serial communication interface, 16kB flash memory, and 512 bytes of RAM (preloaded with a sample program)
4. Two 10-pin PCB connectors female
5. 32.768-kHz clock crystal
6. Quick start guide
7. Two LaunchPad development kit stickers
8. Trainer Board:-
   The complete circuit diagram should be is screen printed on component side of the PCB with circuit and Parts at the same place. The true value of component is printed on component side. 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 has holes for alignment and repair. The testing points are provided with 1.25" tags to connect CRO probe.

9. Training Package:-
1. E-Books for MSP430 Microcontroller: 10 Nos. in PDF Format
2. Mp4 Video Class for MSP430 Microcontroller: 40 Classes in Mp4 on Pen Drive
3. Trainer Quality must be comply with international standard.
4. All accessories and cables needed to make the system functional are to be supplied.
5. Manuals Complete with softcopy and 3 copies of each of the following manuals in English are to be supplied:

   a. Theory Manual   b. Experiments Manual.

   The manual must have Block Diagram, Charts, and True Waveform taken from CRO, Test Points and Connection Diagram. Online manual also is to be provided on website.
6. All software required to be installed and also original Driver CD, Windows OS CD and all other software CD are to be provided in 2 copies.
7. Installing and commissioning must be done within 1 Week from the date of delivery at no additional cost from college.
8. Training at Site: Minimum 1 day for minimum 5 persons nominated by the institution.
9. Objective: The trainee must be able to operate and run all the equipment and experiment.
10. Warranty:
a. At least 1 year inclusive of parts and labor / after sales service from the date of successful completion of installation and commissioning and handling over with response time of not more than 5 working days.
b. The warranty claim must be settled within 10 working days, if more time is required, loan unit has to be provided until the faulty unit is repaired.
c. Telephone and Email support to be provided for any query within 24 Hrs.

10. Experiments:-
1. Software and hardware configuration for MPS430 board.
2. Write a program to blink on board LED.
3. Write program to take input form switch and blink LED.
4. Display "Hello world" on 16* 2 alphanumeric LCD
5. Moving Message Display on 16* 2 alphanumeric LCD.
6. Write a program to interface DHT11 sensor to implement one wire protocol.
7. Write a program to interface Flame sensor.
8. Write a program to interface IR object sensor.
9. Write a program to interface Ambient light sensor using ADC (analog to digital convertor)
10. Write a program to blink led using PWM module.
11. Write a program to interface Ultrasonic distance measurement sensor.
12. Write a program to interface real time clock (RTC) using I2C protocol.
13. Write a program to interface 3 axis accelerometer module using SPI protocol.
14. Write a program for external interrupt, to blink LED.
15. Write a program to send data serially using UART.
16. Write a program to receive data serially using UART.
17. Write a program to send and receive data using UART.
18. Write a program to write data into internal EEPROM.
19. Write a program to read and write back data into internal EEPROM.
20. MSP430 at Application approach – write an application to display temperature and humidity data on LCD and send data over serial port.