

## MTS-54 MSP430 Training Lab



MSP430 training lab is a training platform designed for learning MSP430 microcontroller from Texas Instruments (TI). The microcontroller used is MSP430F5438A, which is featured with ultralow-power and consists of several peripheral modules targeted for various analog and digital applications.

This trainer integrates various I/O devices. It's available for several application examples, ranging from basic I/O control to advanced topics. Users will be able to learn the control of MSP430 chip in more efficient way.

### ● Features

1. The system adopts classic MSP430F5438A from MSP430 family, very suitable for beginners to learn the control of TI MSP430 microcontrollers.
2. Use DIP switch to control the power of each I/O sets, further reduce mass I/O connecting wires.
3. Measurable system clocks, such as SMCLK, MCLK, ACLK
4. An acrylic cover is placed on the top of MCU area to protect the MCU being damaged from shorting pins or external force.
5. Reserve three sets of expansion sockets to connect with external circuits or modules.

### ● Specifications

1. TI MSP430F5438A chip x 1
  - (1) 100-pin LQFP
  - (2) 256KB Flash, 16KB SRAM
  - (3) Ultralow power consumption
  - (4) 12-Bit Analog-to-Digital (A/D) converter
  - (5) Unified clock system
2. Data switch x 8
3. Led x 8
4. 20 x 2 character LCD x 1
5. 4-digit 7-segment display x 1
6. 8 x 8 multicolor dot matrix LED display x 1
7. Buzzer and status LED x 1
8. Stepping motor and status LED, 7.5 degrees x 1
9. 4 x 4 matrix keypad x 1
10. UART to USB interface x 1
11. EEPROM 64Kbits x 1
12. 10 x 2 extend socket x 3
13. Built-in power supply  
Input AC power : 100V~240V AC, 50Hz/60Hz, 0.65A  
Output DC power : 12V/1.2A, 5V/2.1A, 3.3V/1A

### List of Experiments

1. Digital I/O experiment
2. Interrupt experiment
3. MSP430 clock
4. MSP430 watchdog timer
5. MSP430 timer
6. MSP430 flash memory
7. Universal asynchronous receiver/transmitter (UART)
8. Serial peripheral interface (SPI)
9. Inter-integrated circuit (I<sup>2</sup>C)
10. Analog-to-digital converter module
11. External interrupt and analog to digital conversion experiment
12. LCD display experiment
13. 4x4 keyboard scan experiment
14. Temperature measurement experiment
15. Seven-segment display up-counter experiment
16. Seven-segment display counter experiment
17. LED matrix display experiment
18. Stepper motor experiment

### ● Accessories

1. Power cord x 1
2. Experiment manual x 1
3. Software/source code/document CD x 1
4. USB cable (Type A to Type B) x 1
5. IDC cable (10 x 2 pin) x 1
6. 2mm terminal x 4
7. Dupont wire 1P-1P x 20
8. MSP430 USB-Debug-Interface : MSP-FET x 1

