CPE-MP100B

Microprocessor Training Kit

FEATURES

- Three types of standard MPU board (AT 89S51, ATmega8535 and PIC16F874A)
- Consists of six standard experimental modules such as DC Motor module and Infrared Light Sensor module
- Diverse experiments through the optional components: one ATmega128 MCU board and 16 optional experimental modules
- USB Port ISP cable
- USB Host - cellular phone interface

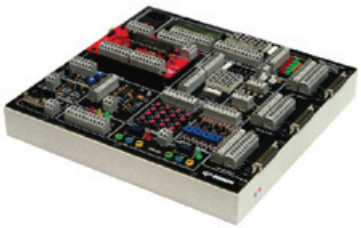
INTRODUCTION

The CPE-MP100B Microprocessor Training Kit is a "three-on-one" training system; three types of the MP100B MCU boards can be placed respectively on top of the microprocessor main board (referred to as "MP100B Master Unit"). The user can learn the memory structure of each MCU, difference in the registers, and arithmetic operation.

The MP100B Master Unit, or microprocessor main board, comprises two sections: Display section and Hardware section. The Display section includes LED, LCD, dot matrix and numeric indicator. The Hardware section includes key pad, relay, thermometer, converter, RS232 interface and various switches. Also, it consists of three connectors in D-sub 25 pins as to support infinite extension with external devices. In addition to optional modules, a hardware developed by the user can be interlocked with the MP100B Master Unit.

The three types of the MP100B MCU boards can be easily mounted and separated from the MP100B Master Unit. In addition to learning purposes, the MCU boards can be used for simple control in industry. Usually, the principles and functions of one MCU are taught for one semester at many learning institutes. However, the CPE-MP100B Microprocessor Training Kit helps students learn three types of MCU at maximum for one semester, and they can make the most of learning effects in a short period of time.

The Microprocessor Training Kit can be interlocked with a cellular phone through the USB-HOST module; and students can do advanced level of programming practices.



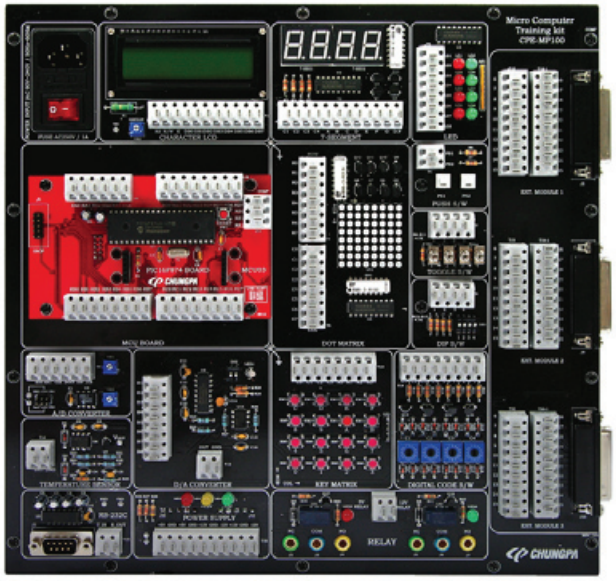
EXPERIMENTAL CONTENTS

- Characteristics of MCU (AT89S51 / ATmega8535 / PIC 16F874 / ATmega128)
  - Memory and structure of MCU
  - System clock
  - Power sleep mode
  - Watchdog timer
- Hardware interface
  - Hardware development using MCU
  - Understanding the functions of MCU
  - Methods of the circuit interface
- MCU software and development tool
  - Cross assembler and AVR studio 4
  - IAR C cross complier
  - Code vision compiler
  - Hardware development tools
- General-purpose I/O port
  - PIN setting
  - Reading PIN values
- Timer and counter
- Analog comparator
- Analog to digital converter (ADC)
- Digital to analog converter (DAC)
- USART (Universal Synchronous/Asynchronous Receiver/Transmitter)
- How to control 7-segment LED
- How to control a Dot Matrix
- How to control a relay
- How to control a limit switch and a reed switch
- How to control 16-key
- How to control a PWM DC motor
- How to control a stepping motor
- How to control thermistor and CdS
- How to control infrared light sensor
- How to control "Relay Output Control Module"
- How to control "Photo Coupler Module
- Practices for I/O configuration

PRODUCT COMPOSITION

1. Microprocessor main board (MP100B Master Unit) : 1set
2. Standard MCU board : 3ea
3. Standard experimental module : 6ea
4. Interface cable and high strength jump wire : 1set

(MP100B Master unit)



SPECIFICATIONS

• MP100B Master Unit	
MCU	Standard: ATmega8535, AT89S51 and PIC16F874A (*Option: ATmega128)
USB host	ATmega 8515 SMS and data communication
LED	5PIE & red color : 8ea
7-Segment	4 digits & red color
Dot matrix	8×8 size & red color
Character LCD	16 characters × 2-line (backlight)
AD converter	12-bit resolution, MCP3202
DA converter	8-bit resolution, DAC0800
Relay	12V-2C (1ea), 5V-2C (1ea)
Temperature sensor	LM35,TO-92 type
DIP switch	4-pole: 1ea
TACT Switch	2ea
TOGGLE Switch	SPDT: 4ea
Digital code switch	4-bit: 4ea
Communication Port	RS232C: 1ea
Dimension	300(W) x 290(D) x 90(H)mm

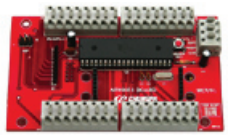
CPE-MP100B

Basic Components

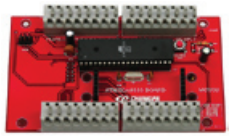
1) Standard MCU board [3ea]

① MCU01: AT89S51 board
② MCU02 : AVR(ATmega8535) board
③ MCU03 : PIC V8.0(PIC16F874) board

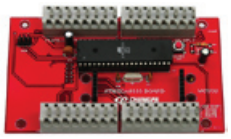
①



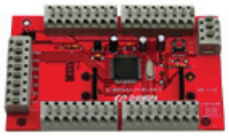
②



③



Optional MCU04



2) Standard experimental module [6ea]

① M01 : DC motor module
② M02 : Stepping motor module
③ M03 : Limit switch & reed switch module
④ M04 : Thermistor(NTC) & CDS module
⑤ M05 : Infrared distance & photo interrupter module
⑥ M06 : Infrared light sensor module

①

②

③

④

⑤

⑥

Optional Components

1) Optional MCU board [1ea]

• MCU04 : ATmega128 board

2) Optional experimental modules [16ea]

• M07 : Breadboard module
• M08 : Extension PCB module
• M09 : Peripheral expansion 8255 module
• M10 : 8-relay control module
• M11 : 8-digit switch control module
• M12 : 16-LED control module
• M13 : Graphic LCD control module
• M14 : AC servo motor control module
• M15 : 4-channel AD/DA converter module
• M16 : VF(Voltage-to-frequency) converter module
• M17 : FV(Frequency-to-voltage) converter module
• M18 : Stepping motor's N.C position control module
• M19 : DC motor's speed & position control module
• M20 : AC lamp control module
• M21 : Large dot-matrix control module
• M22 : Isolated photo coupler module

M07/Bread board module

M10/8-Relay control module

M22/Isolated photocoupler module

STANDARD ACCESSORIES

• Power cord : 1ea
• Serial cable : 1ea
• PIC kit V2-PIC download cable : 1ea
• USB-ISP cable V3-AVR & 8051 download cable : 1ea
• High strength jump wire : 1set
• Application software CD : 1ea
• User's guide manual: 1ea
• Experimental manual : 1sea

• Key Components of MP100 Master Unit