

# >>Microprocessor

## 8bit Micro controller AVR Training Kit



### HBE-MCU-Multi Mini(AVR)

- Basic 8 bit MCU Training Kit based ATMEL CPU(ATmega128A)
- Mounted several application modules on board
- Supply latest AVRISP mkII download tool
- Various example program sources for experiment

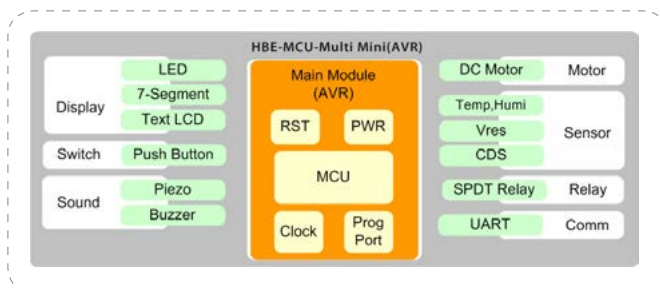
### Introduction

8-bit MCU had been studied in educational field for a long time for basic theme of processor. The AVR Trainer is one of the most comprehensive training kit because a lot of industrial goods had been used this MCU. HBE-MCU-Multi Mini(AVR) is cost effected Training Kit mounted essential application on board for helping to understand MCU programing procedure. Supply latest download tool, AVRISP mkII program interface.

### Features

- **AVRStudio 4 Full development Environment with Editor, Assembler and Simulator**  
Atmel's superb development environment, AVR Studio 4, is included on the CD so you do not have to download it. It includes full editor, assembler and simulator for all the AVR devices. It is project based so that you can keep all your files together without any hassle.
- **WinAVR C Compiler that is integrated into AVR Studio**  
The WinAVR C Compiler supplied is unlimited and full of features. It can be run from the command line but most users will probably prefer to integrate it into AVR Studio.
- **Supply application example sources**
- **Mounted Latest USB AVR-ISP In System Programmer : AVRISP mkII**
- **Mounted various application modules for helping to understand MPU operation.**
  - Display : LED, 7-segment(Static/Dynamic), TextLCD
  - Switch : Push Button
  - Sound : Piezo, Buzzer
  - Sensor : Temperature/Humidity, Variable Resistor, CdS
  - Communication : UART
  - Others : Relay, DC Motor

### Block Diagram



## Specification

### • MCU

Item	Maker	Model	Software	Specification
AVR	ATMEL	ATmega 128A	AVR Studio WinAVR	Up to 16 MIPS Throughput at 16MHz JTAG Interface, ISP Program 128KB FLASH, 4KB SRAM, 4KB EEPROM 8-Ch PWM, 8-Ch 10bit ADC I <sup>2</sup> C, SPI, 2EA 8bit Timer, 2EA 16 Bit Timer Dual UART

### • On-Board Device

Item	Description
Text LCD	20X2 line 1EA
LED	Red LED (LED ramp 8EA / Heart LED 16EA)
Dynamic FND	4 Digits 7 Segment 1EA
Static FND	7 Segment 2EA
Push button	6mm X 6mm, 16EA
DC Motor	5VDC 2EA
UART	UART 1EA
Piezo	5VDC 1EA
Buzzer	5VDC 1EA
Vres	Variable Resistor 1EA
CdS	Photocell 1EA
SHT11 (Temp./Humidity Sensor)	Temperature : -40~120°C / Humidity : 0~100%RH Operation Voltage : 5V / Output : I <sup>2</sup> C Interface
Relay	2Channel 1EA Operation Voltage : 5V (Max 1A@30VDC / Max 0.5A@125VAC)

## Contents

1. Preparing for test & Install AVR Studio
2. Turning on LED
3. Static FND
4. Dynamic FND
5. Inputting several switches(Keypad)
6. Displaying characters on TextLCD
7. Receiving external input of Timer/Counter
8. Interrupt
9. Timer/Count Overflow Interrupt
10. DC motor
11. PWM
12. UART Communication
13. ADC
14. EEPROM
15. Temperature/Humidity Sensor, Relay

## Accessories



Main Unit 1EA



Manual and CD  
1EA



Charger(5V/2A)  
1EA



USB Cable  
1EA

## Microprocessor

3D PRINTER  
SMART NUCLEO  
HBE-Arduino-Sensor  
HBE-MCU-Multi  
HBE-MCU-Multi-SENSOR  
HBE-MCU-Multi II - ST  
HBE-MCU-Multi Mini(AVR)  
HBE-CAN