>>Microprocessor

MCU education platform that can be controlled by smart phone and video course is prepared

HBE-MCU-Multi II - ST

- Support various MCUs with independent module structure
- Module application by function
- Provide test pins to improve MCU learning efficiency
- Provide various interfaces for signal connection between MCU and module
- Various examples for basic practice and communication-related project practice
- Provide program source
- Provide graphic language tool for C language education through MCU application

Introduction

The 8-bit based MCU product is the processor's basic educational theme that has been used in the educational field for a long time. However, in the case of products that were designed to fit the framework of infant education, which was the previous education method, the user could not configure the desired function.
In order to effectively apply creative engineering education in college and high school recently, this product supports various MCUs and independently modularizes each function to provide various project classes including basic education and user's requirements promptly It is a micro-embedded education system that can be applied. In addition, we also provide training environment for 32-based MCUs that are of interest in MCU field.

Features

- The ATmega128A and Cortex-M4 devices are designed as modules with a connector structure that can be attached and detached, respectively, to enable learning of various microcontrollers.
- MCU module and function module can be connected in various ways.
- Each functional module is configured as a detachable module type, enabling application design of the desired form by utilizing the function module separated from the base board.
- Provide a graphical programming language with real-time C language conversion capabilities for use in C language learning through MCU learning and MCU applications.
- Provide dedicated measurement terminals for easy signal analysis of MCUs and applications.
- Various input switches and output display are provided.
- Various sensor modules can be installed.
- Provide application modules for basic MCU training.
- Provide a variety of sample program sources for application labs.
- Support a wide range of design environments at the application product design level from basic processor training.
- Stack module and Actuator module are provided to maximize product utilization.
- MCU training platform with video tutorials.

Textbook Contents

Text book name	Textbook Contents
	**Microcontroller learning with HBE-MCU-Multi II (AVR ATmega 128)** 1. HBE-MCU-Multi II 2. AVR Microcontroller 3. LED, 7-Segment Control 4. Switch module 5. LCD Controller(HD44780) Control 6. LCD Module Program 7. ATmega 128A Interrupt 8. 8-bit timer / counter 9. Operation mode of 8-bit timer / counter 10. 16-bit timer / counter 11. 16-bit timer / counter operation mode 12. Receiving external input using T/C 13. A/D converter and relay control 14. Stepping motor control 15. USART communication 16. Serial interface

Specification

• MCU

Item	Maker	Model	Compiler	Specification
AVR	ATMEL	ATmega 128A	Codevision HBE-VPEx-C™ HBE-AVR-ISP mkII™	Up to 16 MIPS Throughput at 16MHz JTAG Interface, ISP Program 128KB FLASH, 4KB SRAM, 4KB EEPROM 8-Ch PWM, 8-Ch 10bit ADC I2C, SPI, 2EA 8bit Timer, 2EA 16 Bit Timer Dual UART
Cortex-M4	ST	ST32F405	IAR EWARM	Up to 168MHz Operating, JTAG Program 1MB FLASH, 192+4KB SRAM, Ethernet, Camera, 12 bit ADC

• On-Board Device

Classification	Division	Specification
Display element	Text LCD 16x2 line	Alphanumeric, numeric, special character display, 16x2 lines, 1EA
	LED	Device for status indication using LED on-off, red, 8EA
	Array FND	Display 4 digits, 1EA
	Full color LED	3color(RGB) in 1 device, Including diffusion plate, 4EA
Input device	Push button	6mmX6mm, 8EA
	Dip switch	8 port, 1EA
	Rotary switch	4bit BCD Code, 5pin interface, 1EA
Motor	Step Motor	12VDC, 7.5degree/step, 10mN/m, Hall sensor included, 1EA
Communication	UART	UART 1EA
Memory	EEPROM	2MB, I2C Interface
	SRAM	128KB, 8bit data
Sensor	Vres	Variable resistor 1EA
	CdS	Photocell for light detection, 1EA
	SHT21	Temperature/Humidity Sensor, I2C Interface
DAC	DAC	4ch D/A converter, SPI interface
ADC	ADC	4ch A/D converter, I2C interface
Scope	Oscilloscope	2ch oscilloscope built-in, PC can be used to observe or analyze signals

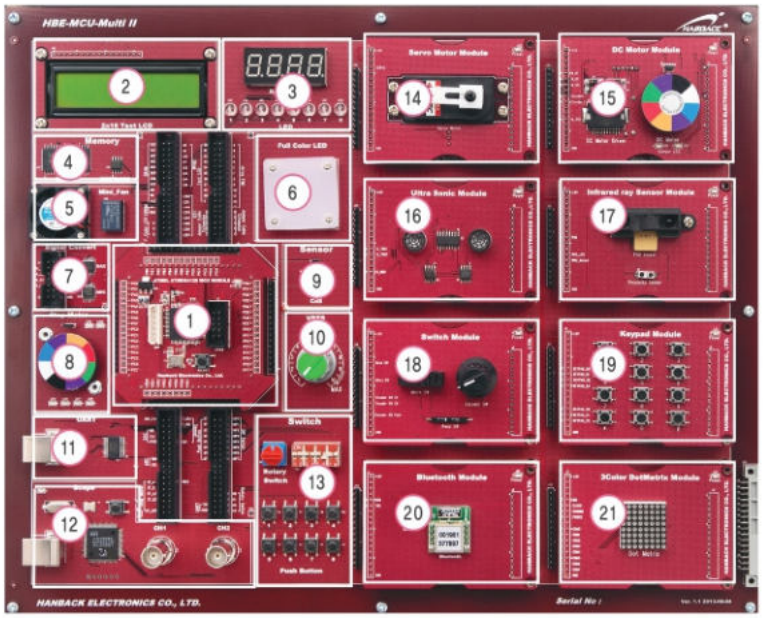
• Module Device

Classification	Division	Specification
Motor	Servo Motor	4.8 ~ 6.0VDC, Torque 3~4.5Kg/Cm
	DC Motor	12VDC, Built-in encoder, Reduction ratio 1/13, Resolution: 6pole, Torque 1.8Kg/Cm
Distance sensor	Ultrasonic wave	Measuring distance 2m, Resolution 10 Cm
	PSD	10~80Cm, 4.5~5.5VDC
Input device	Switch	Reed switch, micro switch, encoder switch each 1EA
	Keypad	Button to configure the keypad, push button 12EA
Display device	3 Color Dotmatrix	8 x 8 pixel
Bluetooth	SPP	SPP, Smartphone support

Microprocessor
>>HBE-MCU-Multi II-ST

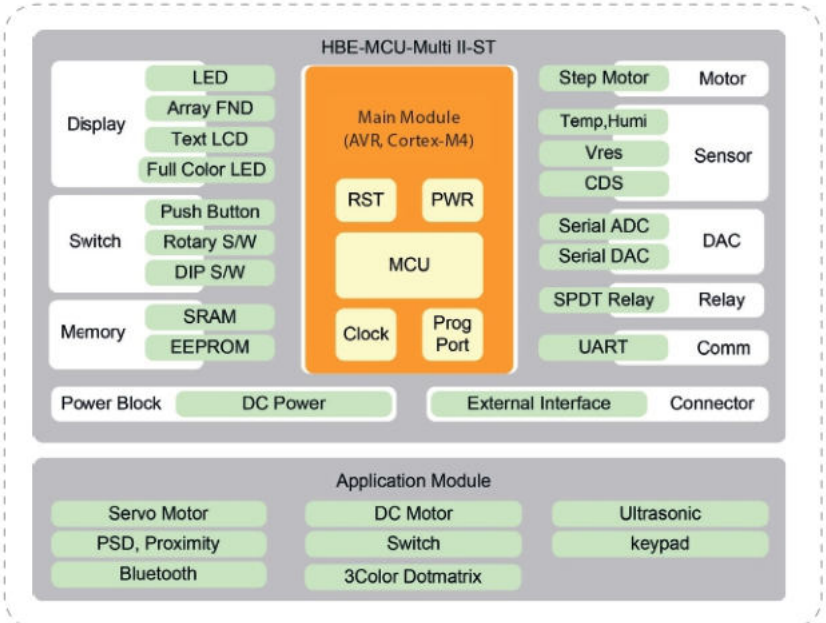
Configuration and Name

HBE-MCU-Multi II-ST is designed to be easily accessible even in the professional field. Basic circuit that assists basic understanding of MCU is mounted, and distance measurement, control using GPIO, and motor are added as application module.
With the added application module, you can understand how the devices are controlled by MCU. Visual programming language tools make it easy to understand the difficult C language controlling the communication devices and modules.



1. Replaceable MCU module
2. Text LCD
3. Array FND, LED
4. Memory
5. Fan, Relay
6. Full Color LED
7. ADC, DAC
8. Step Motor
9. Temperature/humidity sensor
10. Variable resistor
11. UART
12. Oscilloscope
13. Switch element
14. Servo motor
15. DC motor
16. Ultrasonic sensor
17. Infrared distance sensor, proximity sensor
18. Switch module
19. Keypad module
20. Bluetooth module
21. 3Color Dotmatrix

Block diagram



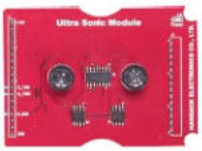
Module Function

Servo Motor

This module is equipped with a servo motor set to move by a certain angle.

DC motor

It is a module with built-in encoder that generates DC motor and pulse according to rotation. It is a module to know how to use DC motor control and encoder.



Ultrasonic sensor

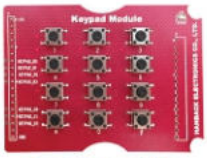
It is a module that can understand the principle of ultrasonic wave used as distance sensor and the mechanism to measure distance.

Infrared distance sensor, proximity sensor

It can be used for distance measurement and object detection by extending distance sensor and proximity sensor to one module using infrared rays.

Switch module

motion, you need a switch that generates a signal at a limited distance. It is a module which collects the switch to use at that time.

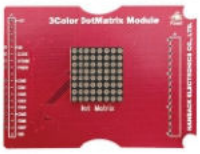


Keypad module

3X4 buttons are implemented and serve as input devices for various applications.

Bluetooth module

It is a module that can build and communicate Bluetooth network using AT command. Only data communication is supported. It does not provide hands-free function.

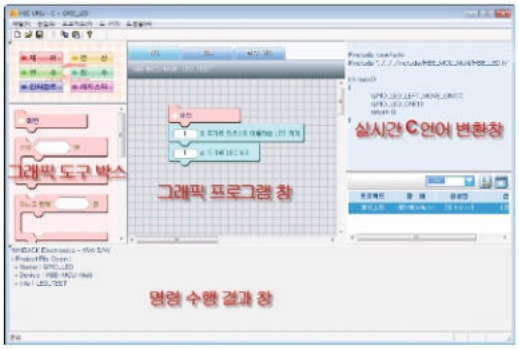


3Color Dotmatrix

It is a dot matrix module that can display 3 colors and is used as various display devices.

HBE-VPEx-C™

HBE-VPEx-C is a VPL (Visual Programming Language), a graphical language tool configured to run programs using graphics, compile with a single button, and proceed to download. In addition, real-time C language conversion function is provided so that it is easy to understand how difficult C language control MCU is.



Product Components

HBE-MCU-Multi II -ST

User Manual and Product CD

MCU Programmer

AC Power Cable

USB Cable

Jumper Cable

Oscilloscope Probes

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