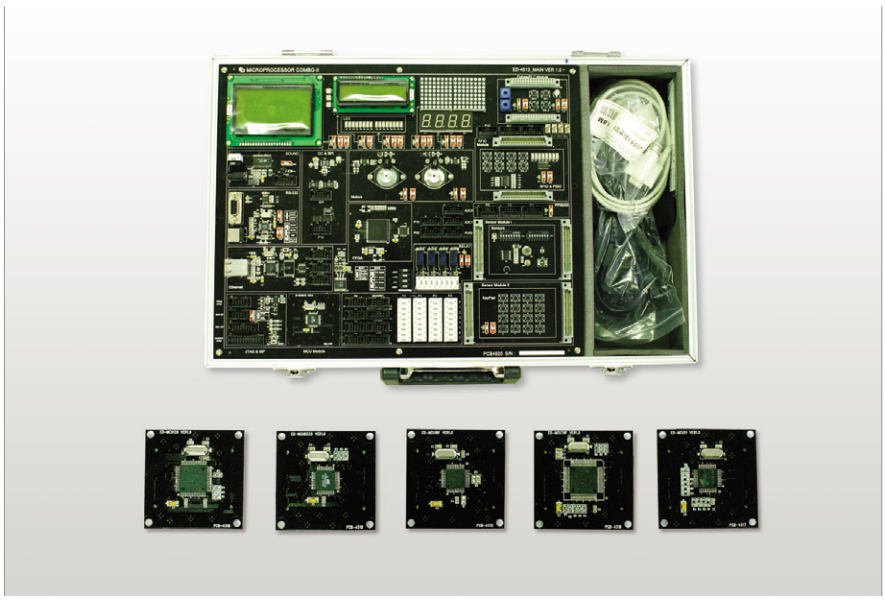
New

MICROPROCESSOR COMBO II

ED-4513

- Mountable 5pieces MCU(8051,PIC, ATmega128, ATmega8535, upd78F0547)
- Practice of various communications such as RS-232 USB and Ethernet
- SoC experiments using the default FPGA (EP1C4F324)
- Storage of sensor data display and excel data using UI(LabVIEW)
- Module Extension : RFID(13.56MHz), ZigBee, LonWorks, 8 sensor modules(options)
- Possible to be linked with ED-3160 and ED-5965(options)



> EXPERIMENTS

MICROPROCESSOR

- Digital I/O control - Tact Switch, Toggle Switch, Relay control, Key Matrix
- Display control - FND, Dot matrix, TEXT LCD, Graphic LCD
- Motor Control - DC Motor(24V), Stepping Motor (24V)
- ADC/DAC Control - LM35, VR, CDS, Human detection sensor
- Communication Control - RS-232, USB, Ethernet
- Time/Temperature - DS1620, DS1302
- External EEPROM Read/Write - 2432, 9366 (EEPROM) READ/WRITE
- RFID/Zigbee/LonWork s(Option)

SENSOR

- **Optical Sensor**
  - » CdS, Photo Diode, Photo Transistor, Photo Interrupt, Photo Coupler, Pulse Diffused Sensor, Laser Diode, Color Sensor
- **Temperature Sensor**
  - » RTD Sensor, Thermocouple Sensor, Thermistor, IC, Temperature Switch Sensor
- **Magnetic Sensor**
  - » Hall IC(switching, linear type), Magnetic Resistance(MR elements)
- **Proximity Sensor**
  - » Inductive Sensor, Capacitive Sensor, Magnetic Sensor

> SPECIFICATIONS

MCU

- **AT89C51ED2**
  - » 11.0592MHz System Clock
  - » 64Kbyte Flash Memory
  - » 32Pin GPIO Ports
  - » UART, Interrupt, Timer
  - » ISP Support
- **ATmega128**
  - » 7.3728MHz System Clock
  - » 128Kbyte Flash Memory
  - » 40Pin GPIO Ports
  - » 10bit 8-channel A/D Converter
  - » UART, Interrupt, Timer
  - » ISP Support
- **PIC16F877**
  - » 4MHz System Clock
  - » 16Kbyte Flash Memory
  - » 32Pin GPIO Ports
  - » 10bit 8-channel A/D Converter
  - » UART, Interrupt, Timer

MICROPROCESSOR COMBO II

ED-4513

» ISP Support
- **ATmega8535**
  - » 7.3728MHz System Clock
  - » 8Kbyte Flash Memory
  - » 32Pin GPIO Ports
  - » 10bit 8-channel A/D Converter
  - » UART, Interrupt, Timer
  - » ISP Support
- **uPD78F0547**
  - » 20MHz System Clock
  - » 128Kbyte Flash Memory
  - » 32Pin GPIO Ports
  - » 10bit 8-channel A/D Converter
  - » UART, Interrupt, Timer
  - » ISP Support

MAIN BOARD

- **FPGA**
  - » EP1C4F324 : 4000 LEs, 2 PLLs
    249Pin User I/O
- **Display**
  - » LCD : 128 x 64 Graphic LCD with back light
    16 x 2 line Character LCD with back light
  - » Dot Matrix : 8x8 Dot Matrix x 2
  - » 7-Segment : 4digit 7-Segments
  - » LED : 16digit LED(Green &Red)
- **Motor**
  - » Motor : Stepping Motor
- **Relay**
  - » Relay : DC Motor (PWM, DAC)
    DC Relay 4EA
- **PISO**
  - » PISO : 74HC165 Parallel Input Serial Output
- **SIPO**
  - » SIPO : 74HC595 Serial Input Parallel Output
- **Interface**
  - » RS-232 : UART 1EA
  - » USB : USB to RS-232
  - » Ethernet : 10Base-T Ethernet (Up to 25Mbps)
- **Sound**
  - » Sound : ISD2560 Voice Recode/Playback
- **RTC**
  - » RTC : DS1302 Real Time Clock
- **Sensor**
  - » Temperature : -55˚C~ +125˚C Digital Thermometer
  - » Pyroelectric Infrared : D203S Pyroelectric Infrared Sensor
  - » Humidity : SHT11 Humidity Sensor

SENSOR MODULES

- **Optical Sensor**
  - » Color Sensor : TS230 color sensor
  - » Infrared Sensor : KSM603LM, SI5312 infrared sensor
  - » Fiber Optic Sensor : BF3RX optical fiber sensor
- **Temperature Sensor**
  - » RTD ; PT100 RTD sensor
  - » Temperature IC : AD590, LM35
  - » Thermocouple : K type thermocouple sensor
- **Proximity Sensor**
  - » Inductive : PSN17-5DP inductive proximity sensor
  - » Capacitive : CR18-8DP capacitive proximity sensor
- **Magnetic Sensor**
  - » Magnetic : Hall IC : SS49
    Output Range : -1000~+1000 Gauss

GENERAL CHARACTERISTICS

- Dimension : 490(W) x 160(H) x 320(D)mm
- Input Voltage : AC 220V

ACCESSORIES

- Serial Cable : 1ea
- USB Cable : 1ea
- Ethernet Cross Cable : 1ea
- 10pin Data Cable : 1ea
- AC Power Cord : 1ea
- CD (Program Source, Circuit Diagram) : 1ea
- Experimental Manual

OPTION

- RFID : 1ea
- ZigBee : 1ea
- LonWorks : 1ea
- Module Sensor Modules : 8ea