

A group of Microprocessor Embedded Trainer YMBT-100 / YMBT-200 / YMBPT-2000

This Embedded training system is used for basic Hardware manufacture & basic CPLD programming and also used for basic Communication & control of various types of Sensors, using Microprocessor.

PLD Applications Trainer



YMBPT-2000

Microprocessor Application Trainer



YMBT-200

Microprocessor Basic Trainer



YMBT-100

Microprocessor Basic Trainer

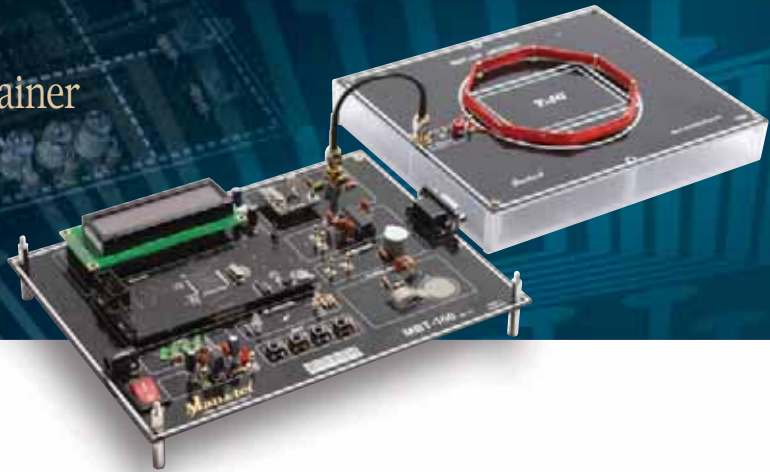
Model: YMBT-100

YMBT - 100 is a training system providing hardware manufacturing practices, external module control practices, I/O control practices using microprocessor and practices regarding applications of home security & RFID technology.



Microprocessor Basic Trainer

YMBT-100



YMBT-100 Training Contents

Part 1. Introduction

- Chapter 1 Introduction to MBT - 100 trainer
- Chapter 2 Build up practice environment

Part 2. Basic hardware practices

- Chapter 3 Structure of ATMEGA 128
- Chapter 4 Assembly and operation practice of ISP
- Chapter 5 Assembly and operation practice of RS232
- Chapter 6 GPIO connection and LED operation practice
- Chapter 7 Checking RFID reader's operation
- Chapter 8 Checking text LCD's operation

Part 3. C programming practices

- Chapter 9 Buzzer beep operation practice using IR sensor
- Chapter 10 LCD printing practice using IR sensor
- Chapter 11 Buzzer beep operation practice using Force sensor
- Chapter 12 LCD printing practice using Force sensor

Part 4. Application practices

- Chapter 13 Reading tag information by RFID reader
- Chapter 14 Sensing break - in by IR sensor operation test
- Chapter 15 Sensing break - in by Force sensor operation test

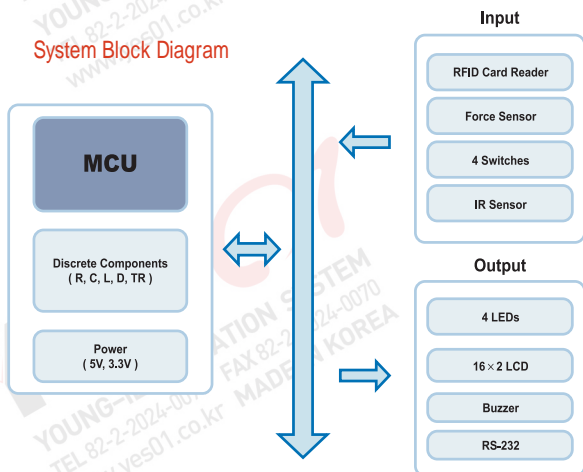
YMBT-100 Features

- 1) Provides hardware assembling practices.
- 2) Contains theories and practices.
(ATMEL 's ATMEGA128)
- 3) Provides RFID 13.56MHz control practices.
- 4) As sample sources are included in main system, no extra equipment is needed.

YMBT-100 Functions

1. Understand Microprocessor Hardware Manufacturing
2. I/O control practice using Microprocessor
3. Home Security & RFID Practice applying Microprocessor

System Block Diagram



YMBT-100 Components

· Main Board	1 EA
· CPU Board	1 EA
· RF Board	1 EA
· 13.56MHz ANT Board	1 EA
· ISP Board	1 EA
· RS-232C Cable	1 EA
· 9V Adaptor	1 EA
· 13.56MHz RFID Card	3 EA
· RF Cable 10cm	1EA
· Manual book	1EA

YMBT-100 Hardware Specifications

Items	Spec
Dimension	202x156(mm)
Communication	Monitoring: Character LCD(16x2), RS-232C
Type's Discrete	Program Download: ISP
	IR Sensor (Rx: SP23G, Tx: EL23G)
	Force Sensor (UST-SNR-FSR)
	ISP(In-System Programming) Download
	RFID 13.56 MHz Tranceiver(TI S6700)
	RFID Reader(13.56MHz, Long Wire Loop Antenna)
	RS-232C 9 Pin Connector
	16x2 Character LCD
	Green LED : 4 EA
	Tact Switch : 4 EA
Buzzer : 1 EA	
Power	DC 9V/1500mA Adapter
Microcontroller	ATMEGA128-16A(Up to 16MIPS Throughput at 16 MHz) Advanced RISC Architecture Nonvolatile Program and Data Memories 128Kbyte JTAG(IEEE std.1149.1 Compliant(Interface) Operation Voltages: 4.5 * 5.5V for ATMEGA128 128K Bytes Flash program memory Internal 8-Channel, 10-bit ADC Internal EEPROM 4Kbytes Internal SRAM 4Kbytes
RF(S6700)	1) 13.56 MHz
RFID Transponder	2) ISO 15693, IOS 14443 supports

Microprocessor Application Training System

Model: YMBT-200

Microprocessor Application Training System

YMBT-200



YMBT - 200 Features

1. MBT - 200 is designed as an experiment and practice system for electricity, electronics, computer, communication, and control and is suitable for students beginning with 8bit microprocessor.
2. Character LCD, DC Motor, Step Motor and sensors are employed for training basic functions and programming of ATMEGA128
3. Peripheral device control for each module in C language and board booting and software and hardware debugging using the WinAVR compiler.
4. Experiment and practice for I/O ports for various peripheral devices, Dot Matrix, Step Motor speed, LCD, FND, KEY, sensor, etc.
5. Application project can be designed by selecting a modular combination as Character LCD, DC Motor, Step Motor and sensors are modularized.
6. The textbook is edited and provided in the order of theory, practice and report.

YMBT - 200 Functions

1. 8 bit microprocessor training and practice system
2. AVR architecture and firmware training and practice
3. Practice of initialization code analysis using the AVR compiler
4. Coding practice using experimental C source
5. Practice using various peripheral devices

Contents of YMBT - 200 Textbook

- Chapter 1 AVR(ATmega128) Structure
- Chapter 2 Testing Environment Setup/ Equipment Overview
- Chapter 3 Port Structure and Basic Operation Practice
- Chapter 4 Port Structure and Basic Operation Practice
- Chapter 5 Interrupt Operation
- Chapter 6 Timer/Counter Operation
- Chapter 7 LCD control
- Chapter 8 Operation of Serial Communication Port
- Chapter 9 Programming using GPIO
- Chapter 10 A/D Converter Application
- Chapter 11 Motor Control
- Chapter 12 Graphic LCD Control
- Chapter 13 Application Project Design

YMBT - 200 Specification

Part	Specification
MCU	Operating voltage 4.5V ~ 5.5V
ADC	IR/CDS/FRS Sensor
	Volume
CLCD	4bit CLCD
Digital - Out	Buzzer
	LED(4 colors)
	Melody & Speaker
	Magnetic Transducer
	Ultrasonic Sensor
	Pyroelectric Detector
Module	Base
	Module Connect
	USB to Serial
	Dot - matrix
	FND
	Encoder
Keypad	Keypad, Toggle Switch
DC - Motor	DC motor, IR Sensor
Graphic LCD	
Digital Temperature	Digital Temperature Sensor
External ADC	14 bit ADC
Survo motor	Survo motor
Digital RTC	Serial Read Time Clock IC
Step Motor	Step Motor
Cable	4 - pin, 10 - pin, USB mini B
Adaptor	9V

YMBT - 200 Components

Component	Spec	Qty
MCU (ATMEGA 128)	Module	1
Application Practice Module	Kinds	14
Step - Motor	EA	1
10 - pin Cable	EA	7
4 - pin Cable	EA	14
USB mini B Cable	EA	1
Adaptor 9V	EA	1
Textbook	Volume	1
CD	Copy	1

PLD Application Training system

Model: YMBPT-2000



YMBPT -2000 Features

- 1) Optimal product to the students beginning FPGA(Cyclone).
- 2) Able to design various components and train components interface as it is interfaced with AVR and FPGA(Cyclone) which is installed to YMBPT -2000 main board.
- 3) Providing various peripheral devices and available of various exercises such as DC motor, step motor, ultrasonic sensor & infrared sensor, serial communication, VGA, SW&LED and ADC board.
- 4) Available of wireless RC CAR control using FPGA+AVR.

YMBPT -2000 Functions

- 1) Basic training on FPGA and 7 different peripheral devices.
- 2) Application exercise like wireless RC CAR auto & manual drive mode practice.
- 3) Coding exercise using VHDL
- 4) connection and control of external equipment using extended GPIO.

YMBPT-2000 Training contents

- Chapter 1. VHDL basic in - /output
- Chapter 2. AVR in - /output port INTERFACE
- Chapter 3. AVR universal(GPIO) port INTERFACE
- Chapter 4. SERIAL ADC component design
- Chapter 5. Component design of SERIAL ADC using AVR
- Chapter 6. SERIAL DAC component design
- Chapter 7. Component design of SERIAL DAC using AVR
- Chapter 8. Component design of SERIAL communication using AVR
- Chapter 9. Interface of AVR and ultrasonic (SRF04) component
- Chapter 10. Interface of AVR and DC MOTOR COMPONENT
- Chapter 11. Interface of AVR and SERVO MOTOR COMPONENT
- Chapter 12. Interface of AVR and STEP MOTOR COMPONENT
- Chapter 13. VGA COMPONENT design
- Chapter 14. Interface of AVR and VGA COMPONENT
- Chapter 15. RC CAR design using AVR and FPGA

YMBPT -2000 Specifications

Div	Items	Specifications
main	Base	Module Connect
	AVR	ATmega128 / 8bit / operation voltage 4.5V~5.5V
	FPGA	EP1C6Q240 / operation voltage 5V
	RS -232/USB	RS -232 / USB to Serial
	Ultrasonic/IR	SRF05 / ST -23G(RX) / EL -23G(TX)
	VGA	Resolution 800X600
	LEDs/Switchs	LED 8ea / Tact_SW 4ea / Toggle_SW 4ea
	DC MOTOR	20X25mm, 6.15, DC3V
	STEPPING MOTOR	KH42HM2 - 901, 1.8'
	ADC/DAC	MCP3208 / ADC0809 / DAC7512
	Cable	10pin, 20pin, 30pin, flat cable / socket cable / RS -232 cable / B type USB cable / RGB cable
	Adapter	12V
	Wireless car	Car
RC_Board		ATmega128 / FPGA / Zigbee module / Character LCD / Ultrasonic sensor / LED
Controller		Gun type controller
Control_Board		ATmega128 / Zigbee module / variable resistor /
Battery		7.2V 1A Ni - card battery / AA battery

YMBPT -2000 Components

Items	Q ty	Items	Q ty
Base board	1EA	Wireless controllera	1EA
RC - CAR	1EA	7.2V 1A Ni - Cad battery	1EA
Zigbee module	2EA	adaptor	1EA
AA battery	8EA	RS -232 cable	1EA
10P flat cable	3EA	USB cable	1EA
20P flat cable	4EA	RGB cable	1EA
30P flat cable	1EA	CH254S SOKET cable	25EA
program CD	1EA	Carrying bag	1EA
Application exercise module board	9EA		