A group of Ubiquitous Sensor Control Traniners

ZT-200 / USC-5000 / USC-7000 / USN -1000

This equipment is based on bluetooth and zigbee technology. It provides instructions on techniques used in future home networking, ubiquitous, telemetics and industrial setting management through various experiments on applied area of sensor, motor and power.

USN Trainer

USN -1000

Wireless sensor control system

USC-7000

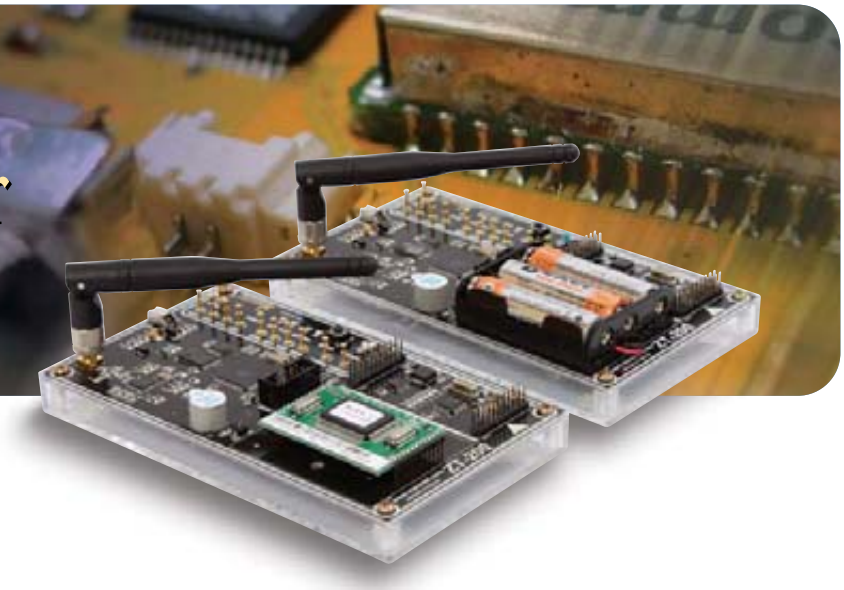
Equipment for experiment on wireless sensor control

USC-5000

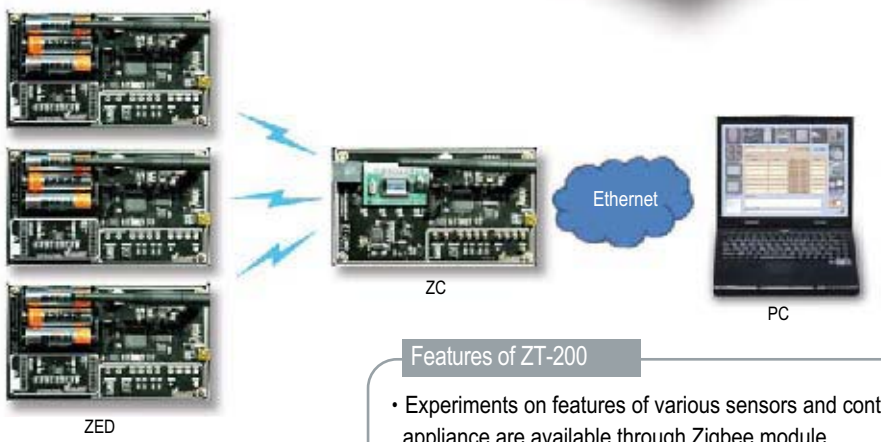
Equipment for experiment on Zigbee wireless communication control

ZT-200

Zigbee Trainer
Model: ZT-200



ZT-200 provides experiment on Zigbee communication and sensor network based on Zigbee combined with various sensors



Features of ZT-200

- Experiments on features of various sensors and control of house appliance are available through Zigbee module
- Experiment on sensor network through Zigbee module is provided
- Various Expansion through expansion ports is available
- Experiment environment is constructed in low price by using free compiler

Contents of ZT-200 text book

Part 1. Introduction to Zigbee technology
- Chapter 1. Introduction to Zigbee
- Chapter 2. Zigbee technology
- Chapter 3. Setting up hardware environment
- Chapter 4. Installing and running software

Part 2. Practice environment of Zigbee system
- Chapter 5. Loading and debugging
- Chapter 6. Running demo program
- Appendix : Demonstrating Zigbee node system which is an embedded system and runs on AVRSudio environment

Part 3. Zigbee system basic programming practice
- Chapter 7. Programming using RTOS
- Chapter 8. LED operation practice using RTOS
- Chapter 9. Handling sensing data by using RTOS

Part 4. Middleware application programming
- Chapter 10. Understanding embedded basic programming
- Chapter 11. Physical layer programming practice
- Chapter 12. MAC layer programming practice
- Chapter 13. Network layer programming practice

Part 5. Encryption practice
- Chapter 14. Reading sensing data in embedded system
- Chapter 15. Reading sensing data in server system

Functions of ZT-200

- Experiment on communication using Zigbee
- Instructions on 802.15.4 MAC
- Experiment on embedded programming
- Saving data - 1Mbit EEPROM provided
- Experiment on terminal using USB
- Experiment on various kinds of sensors

Standard of ZT-200

Classification	Standard
MPU	ATMEGA128 8MHz 8bit process
Means of communication	USB
Input/output port	Expansion of Address and data bus
	GPIO
	ADC
The others	USB 2.0
	Speaker
	LED
	Charge circuit
Sensor	Acceleration sensor
	Earth magnetic field sensor
	Relay
	Pressure Sensor
	Temperature sensor
	Infrared rays sensor

Ubiquitous Sensor Control Trainer

Model: USC-5000

USC-5000 Training Contents

1) Slave Contents

Part I. Introduction Wireless

Chapter 1 Introduction to Ubiquitous Wireless Control System(USC-5000)
Chapter 2 Understanding of the PIC Microcontroller
Chapter 3 Understanding of the Server program and Technology of its operational principle
Chapter 4 Understanding of the Bluetooth Technology

Part II. Basic Wireless

Chapter 5 Inquiry response to wireless equipments
Chapter 6 Connection to wireless equipments
Chapter 7 Wireless Data / Voice Communication
Chapter 8 Disconnection to the wireless equipments

Part III . Experiment Wireless Application

Chapter 9 Remote DC / Step motor control
Chapter 10 Remote Power / Current control
Chapter 11 Remote Temperature sensor control
Chapter 12 Remote Infrared sensor control
Chapter 13 Remote Touch sensor control
Chapter 14 Remote Ultrasonic sensor control
Chapter 15 Remote Gas sensor control
Chapter 16 Remote Humidity sensor control
Chapter 17 Remote Pressure sensor control

1) Master Contents [Option : additional payment]

Section I. Introduction

Chapter 1 Introduction to Ubiquitous Wireless Control System (USC-5000)
Chapter 2 Server program Installation and Operation Theory
Chapter 3 Understanding Bluetooth Technology

Section II. Basic Exercises

Chapter 4 Master Information confirmation Exercise
Chapter 5 Slave Device Inquiry Exercise
Chapter 6 Wireless Connection Exercise
Chapter 7 Voice Connection Exercise
Chapter 8 Voice Connection Termination Exercise
Chapter 9 Data Connection Termination Reception Exercise

Section III. Wireless Application Exercises

Chapter 10 Data Reception Exercise
Chapter 11 Wireless Network Setup Exercise

USC-5000 Features

- USC-5000 is similar features to BT-3000 but more compact and slim in design.
- Bread board is added on to the Master hardware as an additional feature. This will enable students to design and program control modules on the board.
- We also added Master contents as an optional purchase. CD and Textbook is supplied for 1:7 network experiment with the option.

USC-5000 Components

Main package

Master + Application B 'd	1EA
Slave + Motor B 'd	1EA

Module Package

DC Motor control module	1EA
Step Motor control module	1EA
Current control module	1EA
Light control module	1EA
Temperature sensor control module	2EA
Infrared sensor control module	2EA
Touch sensor control module	1EA
Supersonic control module	1EA
Gas sensor control module	1EA
Pressure sensor control module	1EA
Humidity sensor control module	1EA

Accessories

Demo Prosessor PIC16F8772	1EA
Practice Prosessor PIC16F877	2EA
Power Adaptor (Output : 12V,1.5A / Input : 50/60Hz)	2EA
USB Cable	1EA
UART Cable	1EA
SPI Cable	1EA
Carriage & Storage Bag	1EA
6pin Cable	1EA
20pin Cable	1EA
Ear - microphone	2EA
Electric bulb	1EA
Program CD for Slave contents	1EA
Textbook for Slave contents	1EA
Program CD for Master contents [Option]	1EA
Textbook for Master contents [Option]	1EA

Ubiquitous Sensor Control Training System

Model: USC-7000

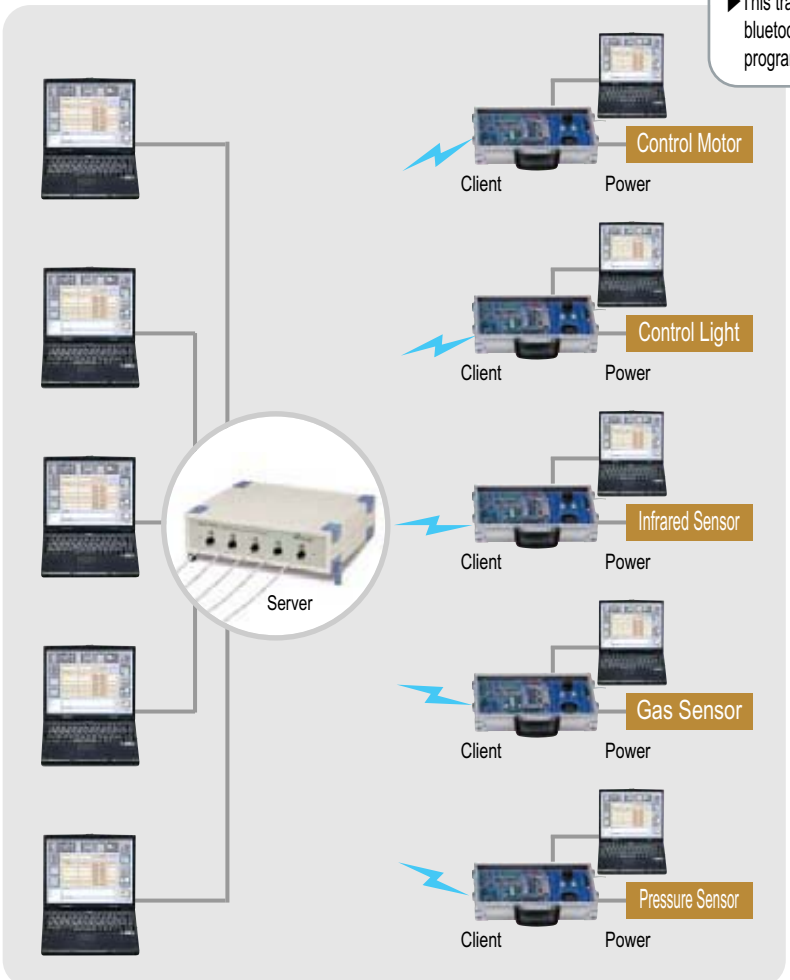
It can be connected to several clients through one server, and useful (gainful) to build an ubiquitous sensor control experimental lab.

USC-7000 Training Contents

USC-7000 Training Contents is same as USC-5000.

USC-7000 Features

- USC 7000 system is composed of one Server(Master) and some Clients(Slave). One Server(Master) has 10 ports to be connected to each computer. One Server(Master) can communicate with 10 Clients(Slave) using 10 computers through one by one matching.
- This trainer helps understanding embedded system and 1:7 bluetooth network communication. Students can design and program their own communication program.



USC-7000 Components

Main package

Server	1EA
Clients	N ea(Max.10EA)
Program CD for Clients contents	1EA
Textbook for Clients contents	1EA
Program CD for Server contents [Option]	1EA
Textbook for Server contents [Option]	1EA

Module Package : Same as USC 5000

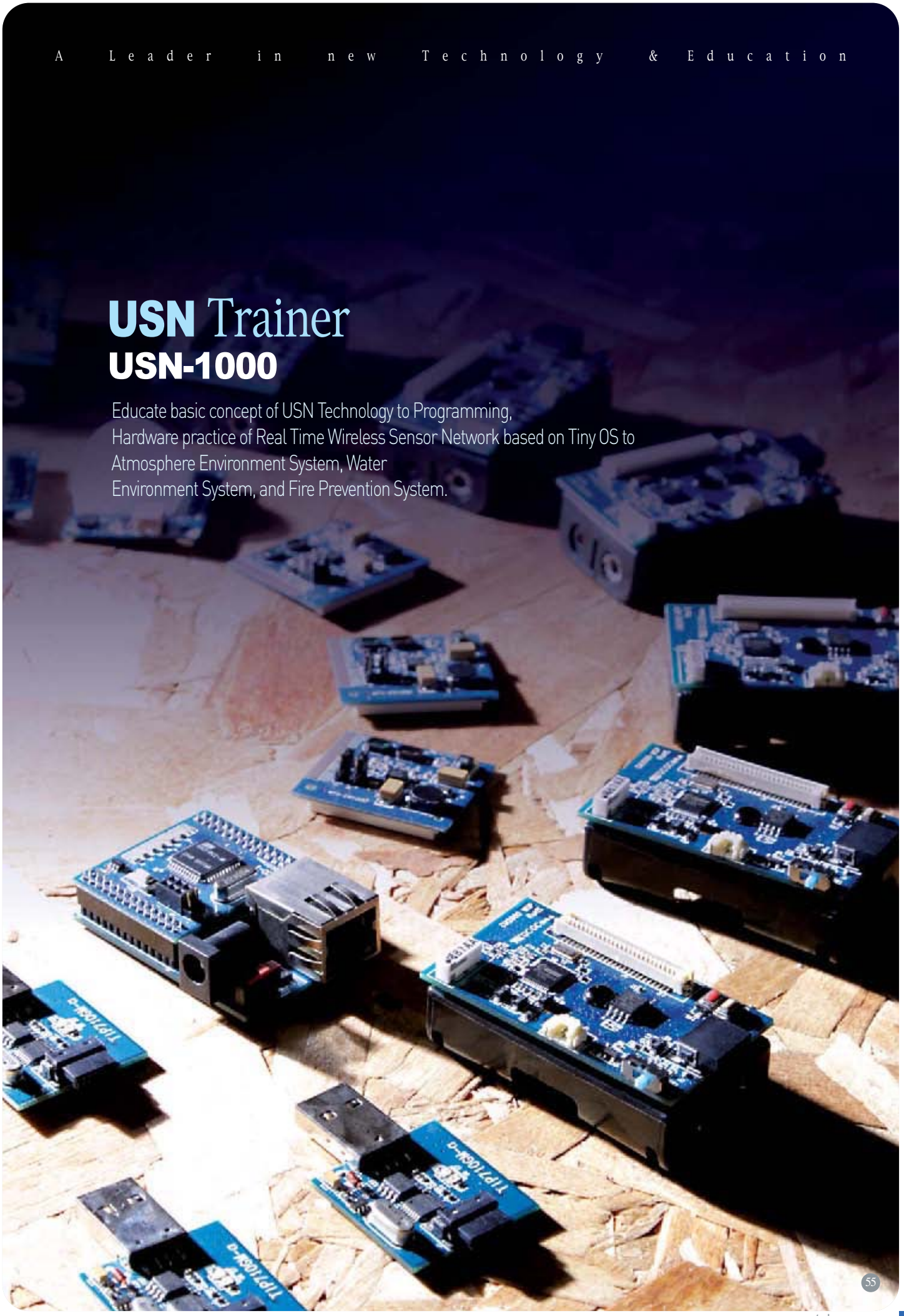
DC Motor control module	1EA
STEP Motor control module	1EA
Current control module	1EA
Light control module	1EA
Temperature sensor control module	2EA
Infrared sensor control module	2EA
Touch sensor control module	1EA
Supersonic control module	1EA
Gas sensor control module	1EA
Pressure sensor control module	1EA
Humidity sensor control module	1EA

Accessories

Demo Processor PIC16F8772	1EA
Practice Processor PIC16F877	2EA
Power Adaptor (output : 12V, 1.5A)	2EA
UTP cable	N EA (Max. 10 EA)
USB Cable	N EA (Max. 10 EA)
UART Cable	N EA (Max. 10 EA)
SPI Cable	N EA (Max. 10 EA)
Carriage & Storage Bag	N EA (Max. 10 EA)

USN Trainer
USN-1000

Educate basic concept of USN Technology to Programming,
Hardware practice of Real Time Wireless Sensor Network based on Tiny OS to
Atmosphere Environment System, Water
Environment System, and Fire Prevention System.



USN Trainer
USN-1000

USN-1000 Features

1) By using Commercial USN Communication, Reliabilitiy is confirmed
2) Using IEEE802.15.4 Layer supporting Zigbee Standard Protocol
3) Real Time Wireless Sensor Network Construction based on TinyOS
4) Supply Ethernet, USB, Serial Interface Board
5) Data Transmission and Reception of 30Mbps Indoor and 150Mbps Outdoor at Maximum Speed using Ceramic Chip Antenna
6) Supply Various Sensor Board Optionally(Temperature, Humidity, Light, PIR, Magnetic)
7) Supply Interface Board for Sensor Extension
8) Supply Powerful USN Monitoring Program
9) Supply Sensor Library, Example Source, Technical Document etc., and Assisting Education

USN-1000 Functions

1) Understanding USN Basic Principle
2) Training USN System Design Technology
3) Practice for IEEE802.15.4 Zigbee Communication
4) Training 6LoWPAN
5) Training Tiny OS Program
6) Training Various Sensor Node Practice
7) Training Practice for Application
   (Monitoring of Various Environment and Water Quality etc.)
8) Monitor Programming Function
9) Various Platform Function for Data Collector
10) Data Processing and Analysis Function
11) Various View Programming Function
12) Various Sensor Replacement by Function Change of View Program
13) Internet Connectivity Function for Use of DB Server

USN-1000 Components

Name	Model	Q'ty	Specifications
USN Communication Node	MTM-CM2000	6	· Processor: MSP430 F1611 · Memory: 1MB · RF Chip: CC2420 · Freq.band: 2.4~2.4835GHz · Transfer rate: 250kbps · Range: 150m (outdoor), 20~30m (indoor)
Sensor Board	MTS-EM1000	3	· Sensor: upporting Temperature, Light, Humidity, Vibration Sensor · LED for Confirmation of Power .Link
	MTS-SE1000	2	· Supporting PIR, Magnetic, Microphone
Interface Board	MTI-USB1000	3	· Interface: USB · Data Rate: 560kbps
S/W CD		1	· Tiny OS Installation Program Example Program etc.

USN-1000 Training contents

Part I Introduction of USN and Zigbee Technology
1. Introduction of USN Technology
2. Introduction of Zigbee Technology

Part II Hardware Structure and SoftwarePractice Environment
3. Hardware Structure
4. System Installation of Software

Part III Tiny OS and NesC
5. Tiny OS
6. NesC

Part IV Practice for USN Embedded Programming
7. Demo Operation
8. Practice for Simple Blink Programming
9. Practice for Blink Programming using Timer
10. Practice for Sensor Programming
11. Practice for Sensing Data Display Programming
12. Practice for Transmission and Receiving Programming via Network
13. Practice for Broadcast Programming

Part V Practice of Application
14. Practice for Property Management