

Internet of Things

IoT SMART Server

You can learn from basic concept of IoT to End Node control using server and other things such as server control, various communication, IoT server construction, etc. It provides you with a wide range of experience including practice for various OS to build and develop a development environment in various languages.



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Product specifications and appearance of this catalog are subject to change without notice for quality improvement.

V2.0.1

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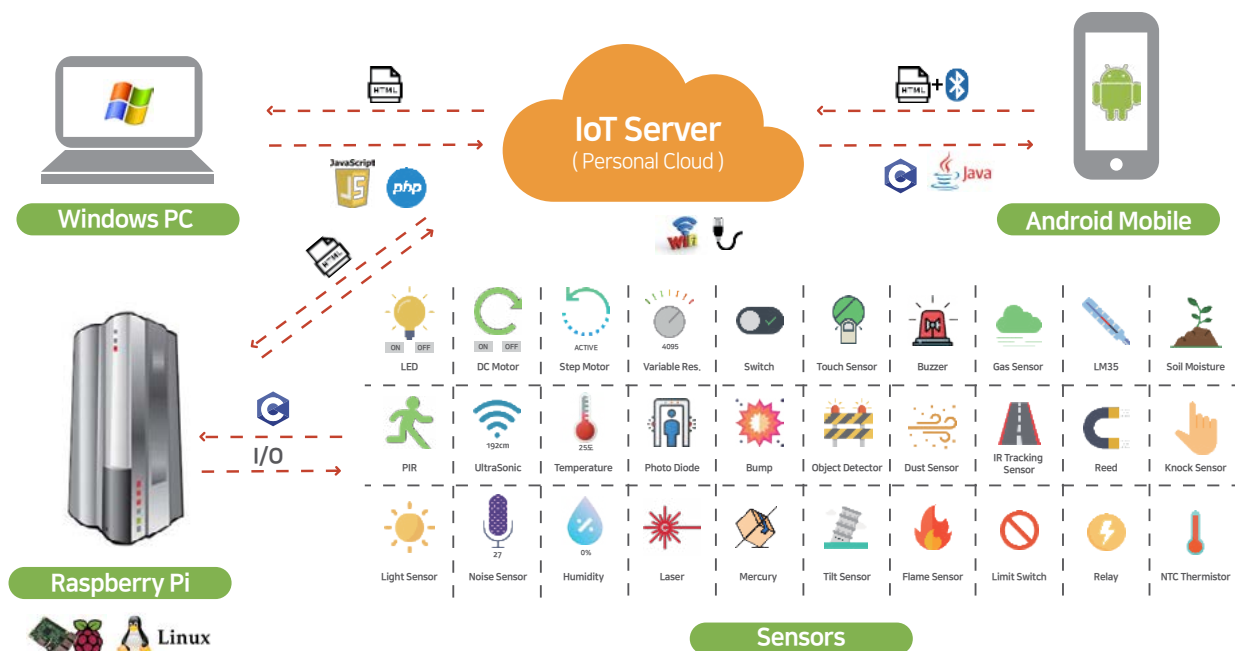
In addition to the basic concept of IoT, it is also possible to learn to implement IoT remote control system in various ways. This product was developed to provide the broad knowledge and experience from the beginning to the completion of IoT field leading the future science and technology.



Product Features

- ▶ Learn different ways to control sensor including basic control, remote control via wireless communication
- ▶ Provides about 120 examples and programs
- ▶ Control and experience about 30 kinds of sensors used in real life
- ▶ Experience server building required in IoT
- ▶ Experience Raspberry Pi and Linux
- ▶ Learn about Bluetooth communication
- ▶ Experience HTTP protocol and server/client communication
- ▶ Learn the interface between programs through CGI
- ▶ Experience a wide range of programming language such as C, HTML, PHP, and JavaScript, etc.
- ▶ Provides training on web page composition via JavaScript
- ▶ Provides Android-based HTTP interlocking application
- ▶ Provides Android-based Bluetooth interlocking application

Block Diagram



Hardware Specification

| Module | Category | Specification | Module | Category | Specification |
|-----------------|-----------------------------|--|------------------|---|---|
| Raspberry Pi 3B | Processor | Broadcom BCM2837 1.2GHz Cortex-A53 Quad-core | Sensor Modules | Touch Sensor | Sensor : TTP223 Operating Voltage : 3.3V~5V Dimension : 15x11(mm) I/O Interface : 1pin Digital Output |
| | Memory | 1GB LPDDR2 SDRAM | | Photo Diode | Sensor : FC33 Operating Voltage : 3.3~5V I/O Interface : 1pin Digital Output |
| | Storage | MicroSD 8GB | | Hit Sensor | Sensor : SW-420 Operating Voltage : 5V I/O Interface : 1pin Digital Output |
| | USB 2.0 | USB A Type 4 ports | | Dust Sensor | Sensor : GP2Y1014AU0F Operating Voltage : 5V I/O Interface : 1pin Digital Input, 1pin Analog Output |
| | Power | Micro USB socket 5V, 2A | | Gas Sensor | Sensor : MQ-2 Operating Voltage : 3.3V~5V I/O Interface : 1pin Analog Output |
| | Audio | 3.5mm A/V Jack | | Soil Moisture | Operating Voltage : 3.3V~5V I/O Interface : 1pin Analog Output |
| | Video | HDMI 1.4 Video | | IR Tracking | Operating Voltage : 3.3V~5V I/O Interface : 1pin Digital Output |
| | Ethernet | 10/100 Base T | | Thermistor Temperature | Operating Voltage : 3.3V~5V I/O Interface : 1pin Analog Output |
| | Wireless | 802.11n, Bluetooth 4.0 | | Temperature | Sensor : LM35 Operating Voltage : 3.3V~5V I/O Interface : 1pin Analog Output |
| | Expansion I/O | 40EA GPIO (2x20 2.54mm Pitch Header) | | Limit Switch | Operating Voltage : 3.3V~5V I/O Interface : 1pin Digital Output |
| RSP Shield | Expansion I/O | 40EA GPIO (2x20 2.54mm Pitch Header) | Knock Sensor | Operating Voltage : 3.3V~5V I/O Interface : 1pin Digital Output | |
| | ADC | 8ch 12bit Analog to Digital Converter | Relay | Feature : NC/NO Relay, 250VAC 10A / 30VDC 10A Operating Voltage : 3.3V~5V I/O Interface : 1pin Digital Input | |
| Sensor Modules | PIR | Sensor : RE200B Sensing Range : 110 Degree Operating Voltage : 3.3V I/O Interface : 1pin Digital Out | Actuator Modules | LED Module | Feature : RED Operating Voltage : 3.3V~5V Current : 20mA Lumminous Intensity : 6000~7000mcd at 20mA View Angle : 30 Degree I/O Interface : 1pin Digital Input |
| | Sound Sensor | Sensor : Microphone Feature : ambient sound detection, sound level detection Operating Voltage : 5V I/O Interface : 1pin Analog Output | | DC Motor | Motor : Micro Type DC Motor Motor Driver : TB6552 Operating Voltage : 5V I/O Interface : 2pin Digital Input |
| | Humidity Temperature Sensor | Sensor : DHT11 Feature : temperature and humidity sensor, ambient temperature and humidity detection Operating Voltage : 5V I/O Interface : 1pin Digital Output | | Step Motor | Feature : 32 Step, 1/16 Gear Motor Motor Driver : ULN2003 Operating Voltage : 5V I/O Interface : 4pin Digital Input |
| | UltraSonic | Sensor : HC-SR04 Feature : 2~500cm distance measuring range, 40kHz Frequency Operating Voltage : 5V I/O Interface : 2pin Digital Output | | Switch Module | Feature : Tact Button I/O Interface : 1pin Digital Input |
| | Light Sensor | Sensor : CdS Operating Voltage : 5V I/O Interface : 1pin Analog Output | | Buzzer Module | Sound Output at 10cm : 60dB(Min) Operating Voltage : 3.3V~5V Current Consumption : 2mA Dimension : 15x19(mm) I/O Interface : 1pin Digital Input |
| | Variable Resistor | Sensor : 1kΩ Variable Resistor Feature : 0~5V DC Variable Voltage out I/O Interface : 1pin Analog Output | | Laser Module | Wavelength : 650nm Operating Voltage : 5V Dimension : 15x19(mm) I/O Interface : 1pin Digital Input |
| | Tilt Sensor | Contact Resistance : 50mΩ max Operating Voltage : 3.3V~5V I/O Interface : 1pin Digital Output Dimension : 15x19(mm) | | RGB LED | Operating Voltage : 3.3V~5V I/O Interface : 3pin Digital Input |
| | Mercury Sensor | Operating Voltage : 3.3V~5V I/O Interface : 1pin Digital Output Dimension : 15x19(mm) | | | |
| | Reed Sensor | Operating Voltage : 3.3V~5V Switching Current : 0.5A Contact Rating : 10W/VA Dimension : 21x36(mm) I/O Interface : 1pin Digital Output | | | |
| | IR obstacle Sensor | Operating Voltage : 3.3V~5V Sensing Range : 2~40cm Dimension : 16x41(mm) I/O Interface : 1pin Digital Output, 1pin Analog Output | | | |
| | Flame Sensor | Operating Voltage : 3.3V~5V Sensing Range : 60 Degree Adjustable Sensitivity : Variable Resistor Dimension : 15x41(mm) I/O Interface : 1pin Digital Output, 1pin Analog Output | | | |

Software Specification

| Module | Category | Specification | Module | Category | Specification |
|-----------------|--------------|-----------------|---------------------|----------|--|
| RaspberryPi 3B | Raspbian | 4.9.2-10 | Android Application | SDK | API 18 (4.3 Jellybean) to API 28 (9.0 Pie) |
| | Kernel | 4.4.11-v7+ | | JRE | 1.8.0_152 |
| | GCC | 4.9.2 | | | |
| Server Software | lighttpd | 1.4.35 | | | |
| | PHP | 5.6.36-0+deb8u1 | | | |
| | Bluetoothctl | 5.23 | | | |

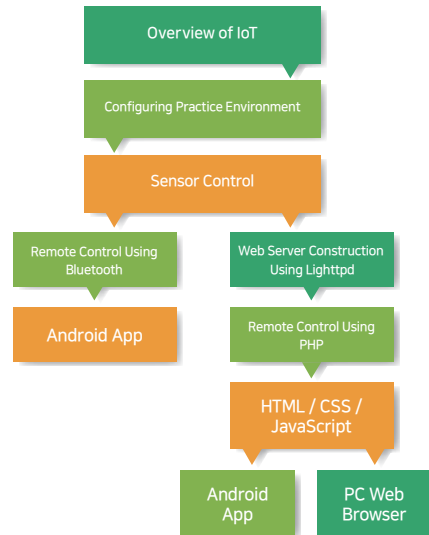
Education Contents

- ▶ **Chapter1.** Overview of IoT
- ▶ **Chapter2.** Configuring IoT Smart Server and Practice Environment
- ▶ **Chapter3.** Practice for Smart Sensor Control Using Raspberry Pi
- ▶ **Chapter4.** Remote Control Using Bluetooth
- ▶ **Chapter5.** Web Server Construction Using Lighttpd
- ▶ **Chapter6.** Remote Control Using PHP
- ▶ **Chapter7.** Configuring Interface Using JavaScript

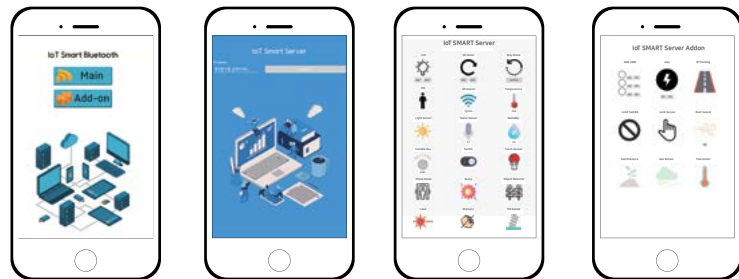
OS



Language



APPS



Layout

