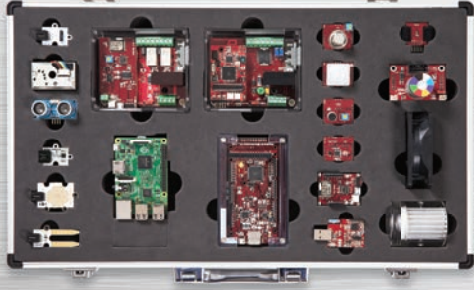


>>IoT(Internet of Things)

IoT Integrated Platform

HBE-IoT Smart

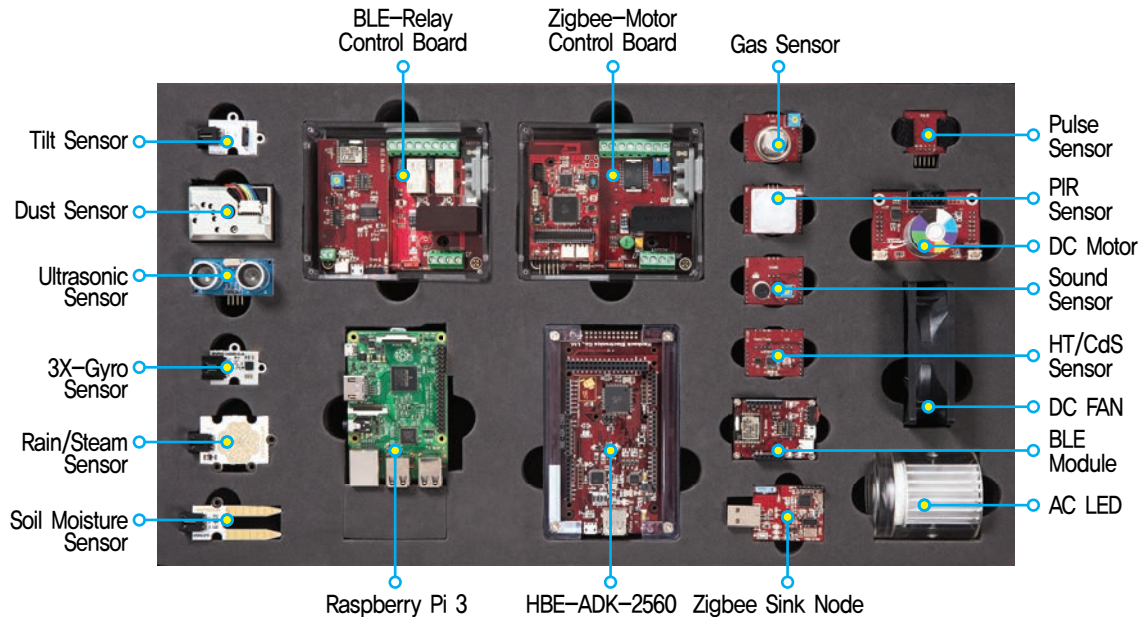
- Raspberry Pi 3, ADK-2560 tabanlı IoT sensör Testi
 - Smart Telefon veya Tablet PC ile birlikte çalışma
 - BLE Modül ile Arduino programlama
 - Zigbee, Bluetooth ve Wi-Fi servis haberleşmeleri
 - BLE tabanlı Sensör Modül servisi
 - Beacon servisi
 - Çeşitli projeleri destekler
- ANDROID, LINUX tabanlı OPEN API servisi



Özellikler

- Herkes IoT servisini kolayca deneyimleyebilmektedir çünkü Sensör Veri Toplama, açık donanım platformunun etrafında uygulanmaktadır.
- ARM Cortex M0 tabanlı BLE Modül ile Giyilebilir Cihaz uygulamasına olanak sağlar.
- Gömülü 10 çeşit Sensör Verisi için temelden uygulamaya kadar örnekler sağlar.
- Çeşitli Sensör Koleksiyonları ve Bina içi Harita Servisi projeleri destekler.
- IoT servisinin erken aşaması olarak adlandırılan M2M haberleşme için Wi-Fi, Zigbee, Bluetooth haberleşmelerini destekler.
- Firmware kullanarak birim modül test fonksiyonu ile modüller tarafından IoT temel tekniğini almak için aktüatör kontrolünü test etmeye ve sensör bilgilerini edinmeye olanak sağlar.
- Sensör Bilgi İzleme ve Uzaktan Erişim kontrol fonksiyonu ile Ağ Geçidi oluşturmaya ve çeşitli projeleri ilerletmeye olanak sağlar.

Configuration and Name



Specifications of Hardware

Module	Item	Specifications	
	Gateway Module supporting Wi-Fi, Bluetooth, Zigbee communication and enabling to collect basic sensor data and mount Camera and LCD by Rsp Shield.		
	Processor	Broadcom BCM2837 900MHz Cortex-A53 quad-core	
	RAM	1GB LPDDR2 SDRAM	
	Storage	MicroSD 8GB	
	USB 2.0	USB A Type x 4 Ports	
	Power	600mA up to 1.8A @ 5V	
	Audio	3.5mm A/V Jack	
	Digital Video	HDMI 1.4 Video out	
	Ethernet	10/100	
	Expansion I/O	40EA GPIO(2x20 2.54mm Pitch Header)	
	Size	87 x 58mm	
		Gateway module used to build Arduino based IoT system.	
		Micro Controller	ATmega2560 16MHz
		Flash Memory	256KByte (8KB used by bootloader)
Clock Speed		16MHz	
USB Controller		ATmega8U2 16MHz	
USB Host Controller		MAX3421E USB 2.0	
GPIO Socket		2x18 Socket(1EA), 1x10 Socket(1EA), 1x8 Socket(5EA)	
Operating Voltage		7~12V	
Dimension		122 x 76(mm)	
Processor		16MHz ARM Cortex-M0	
		Module to control various electronic and electric devices by controlling Relay, based on Bluetooth 4.0(BLE) communication.	
	Processor	16MHz ARM Cortex-M0	
	RF	Bluetooth LE, 2.4GHz	
	Data rate	250 ~ 2000kbps	
	Operating Voltage	AC90 ~ 240V, 50/60Hz	
	AC IN	AC(2 sockets- figure 8), 3.5mm Terminal Block 2EA	
	Relay	2CH, 250V/2A	
	Ext, Digital In	3.5mm Terminal Block 1EA	
	Size	76 x 93.5mm	
		Module to control various Actuators by controlling Motor, based on Zigbee communication.	
Processor		ATmega 128L	
RF part		CC2420 2.4GHz (IEEE 802.15.4 PHY)	
Transfer Rate		Maximum 250Kbps	
Base Sensor		Temperature/Humidity, Intensity of illumination	
Operating Voltage		AC90 ~ 240V, 50/60Hz	
AC IN		AC(2 sockets- figure 8) , 3.5mm Terminal Block 2EA	
Relay		2CH, 250V/2A	
Motor Driver		L298, up to 46V/4A	
Motor In		3.5mm Terminal Block 2EA	
Size		76 x 93.5mm	
	Module to enable to mount various Sensors and to transmit the data acquired from Sensor to smart device or Gateway by Bluetooth 4.0(BLE) communication.		
	Processor	16MHz ARM Cortex-M0	
	RF	Bluetooth LE, 2.4GHz	
	Data rate	250 ~ 2000kbps	
	Operating Voltage	2.2V ~ 5V	
	Battery	Lithium Cell 3V (240mAh@to 2.0V)	
	I/O	GPIO 7EA(I ² C, SPI, PWM), 2.54mm Socket	
	Size	36 x 48mm	

IoT



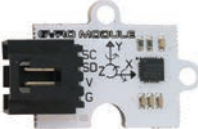

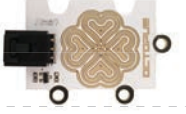



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IoT

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Module	Item	Specifications
Sink Node	Module to connect Gateway, Sensor and Control Module by Zigbee communication. Mounted on Gateway.	
	Processor	ATmega 128L
	RF part	CC2420 2.4GHz (IEEE 802.15.4 PHY)
	Transfer Rate	Maximum 250Kbps
	Operating Voltage	5V
	Size	31 x 55mm
Ultrasonic Sensor	Object Recognition, Distance Measurement Module.	
	Ultrasonic Sensor	HC-SR04
	Distance	2-500cm
	Frequency	40KHz
	Measuring Angle	15 degree
	Operating Voltage	5V
	Dimension	28 x 46(mm)
3X-Gyro sensor	Angular Velocity Detection Sensor Module.	
	Gyro Sensor	Gyro Sensor
	Interface	Interface
	ADC Resolution	ADC Resolution
	Operating Voltage	Operating Voltage
	Dimension	Dimension
Dust sensor	Fine Particle Detection Module as Cigarette Smoke.	
	Dust Sensor	GP2Y1010AU0F
	Detection Way	Photometry
	Distinguish Smoke	Possible (with Pulse pattern of output)
	Operating Voltage	5V
	Dimension	45 x 48(mm)
Rain/Steam sensor	Moisture Detection Module.(rain/steam)	
	Interface	3P Buckled wire connector
	Operating Voltage	3.3V/5V
	Dimension	32 x 53(mm)
Soil Moisture sensor	Reading the amount of water in soil.	
	Output Voltage	0-4V
	Interface	3P Buckled wire connector
	Operating Voltage	3.3V/5V
	Dimension	30 x 65(mm)
Tilt sensor	Switch Module using Tilt.	
	Interface	3P Buckled wire connector
	Operating Voltage	5V
	Dimension	25 x 40(mm)
	HT/Cds Module	Module able to measure Humidity, Temperature and Intensity of Illumination. Non-contact characteristic and not affected by Noise.
	Photo Sensor	CdS 1EA
	Temperature/Humidity	0 ~ 100%RH/-40 ~ 125°C
	Sensor	
	Operating Voltage	3.3V
	I/O	3pin Header 1EA, 4pin Header 1EA (2.54mm Pitch)
	Size	27 x 33mm

Module	Item	Specifications
PIR Module	Human Body Detection sensor sensing Infrared waves generated from animals and human being.	
	Infrared Sensor	RE200B
	Sensing Range	110 degree
	Operating Voltage	3.3V
	I/O	3pin Header 1EA (2.54mm Pitch)
	Size	27 x 33mm
Sound Module	Sound detecting Sensor.	
	Sound Sensor	Microphone
	Sensitivity	Adjustable (with potentiometer)
	Operating Voltage	5V
	I/O	3pin Header 1EA (2.54mm Pitch)
	Size	27 x 33mm
Pulse Module	Sensor measuring Heartbeat by Infrared rays emitted from Infrared LED according to the change of vascular pressure.	
	Pulse Sensor	1EA
	Sensor	Light Photo Sensor
	Operating Voltage	3.3V
	I/O	3pin Header 1EA (2.54mm Pitch)
	Size	24 x 24mm
Gas Module	Sensor Module detecting LPG, natural gas, Coal or Charcoal gas.	
	Gas Sensor	MQ-5
	High Sensitivity	LPG, Natural gas, Town gas
	Low Sensitivity	Alcohol, Smoke
	Operating Voltage	5V
	I/O	3pin Header 1EA (2.54mm Pitch)
	Size	27 x 33mm
LED	Lighting Control Test Module.	
	Type	Diffuse Lighting type
	Color Temperature	Warm White : 2500 ~ 3500K
	Operating Voltage	AC100 ~ 230V, 50/60Hz
	Power Consumption	4W
	Size	40 x 53mm
FAN	Motor Control and Ventilation Control Test Module.	
	Bearing Type	Ball
	Operating Voltage	12V
	Current Rating	230mA
	Speed	3250rpm
	Size	80 x 80mm
DC Motor	DC Motor Module available as Actuator.	
	Motor Driver	TB6552
	Motor	Micro Type DC Motor
	Interface	2x5 Header, 2.54mm Pitch
	Operating Voltage	5V
	Dimension	40 x 60(mm)

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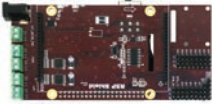


HBE-IoT Smart

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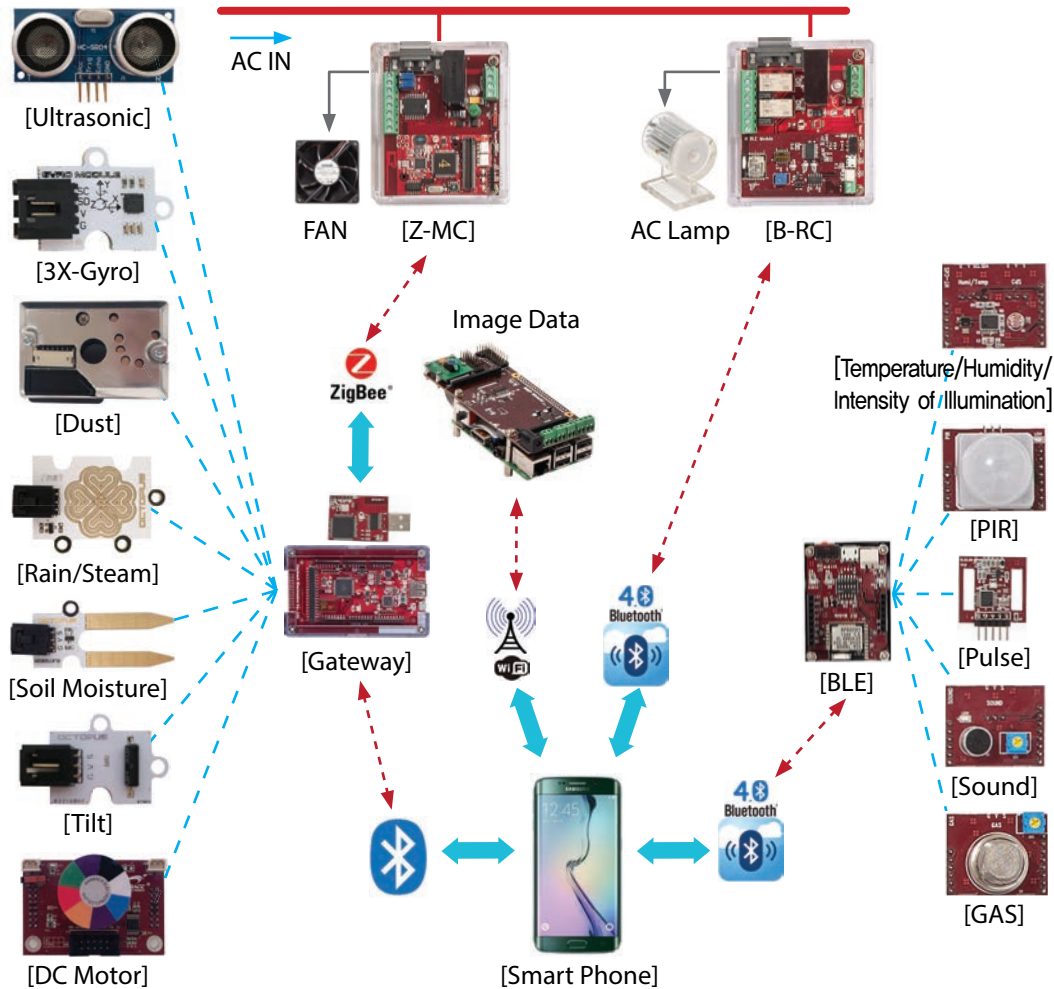
Accessory Option

Module	Item	Specifications
 Rsp Shield	Module enabling to use Motor, GPIO, LCD and Camera easily by mounting on Raspberry Pi board. (Battery as standard)	
	Motor Interface	DC Motor Driver 2EA (3.5mm Terminal Block 4EA)
	Expansion I/O	GPIO: 7EA, UART: 1EA, I ² C: 1EA, SPI: 1EA, ADC: 8EA
	Charger	Li-ion Battery Charger
	Battery	Li-ion Battery, 3.7V/1800mAh
	Size	116.7 x 56mm
 LCD Module	Raspberry Pi LCD Module used by mounting on Rsp Shield.(Touch as standard)	
	LCD Interface	SPI(1x20 2mm Pitch Connector 2EA)
	Touch Interface	SPI(1x20 2mm Pitch Connector 2EA)
	LCD	2.8" TFT LCD(320 x 240)
	Touch Screen	2.8" Touch
	Back Light	LED
 Camera Module	Raspberry Pi Camera Module used by mounting on Rsp Shield.	
	Interface	CSI(Camera Serial Interface), FPC 15P Cable
	sensor	5M Pixel
	Dimension	25 x 20mm
	Dimension	40 x 60(mm)

Specifications of HBE-IoT Smart Software

Module	Item	Specifications
Gateway	OS	Raspbian Linux 3.xx
	Camera Program	Pi Camera Driver, Camera Streaming Server
	Server Program	Z-RC/Z-MC Board Control S/W for Gas Detector, Gas Circuit Breaker and FAN
Z-MC Board	OS	TinyOS 2.x
	Function	Motor Control, Temperature/Humidity/Intensity of Illumination Measurement
B-RC Board	F/W IDE	Arduino 1.5.8
	Function	Relay Control
BLE Module	F/W IDE	Arduino 1.5.8
	F/W IDE	Arduino 1.0.5
ADK-2560 Module	Communication	Bluetooth Communication S/W
	Function	Sensor Control S/W
Sink Node	OS	TinyOS 2.x
	Function	Communication with Z-RC/Z-MC Board
Smart Device	OS	over Android 4.3
	BLE	Door Lock Control, AC LED Control
	Wi-Fi	Gas Detector, Fan Control, Power Monitor
	Camera	CCTV Program

Application




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Educational Contents

Subject	Contents
<p data-bbox="228 1675 501 1771">Smart Sensor and Device control application programming for IoT</p> 	<ul style="list-style-type: none"> Study 1. Introduction to IoT Study 2. Configuration of IoT technology Study 3. Standardization and Security of IoT Study 4. Configuration and Application of Smart Sensor Technology Study 5. Test of BLE(Bluetooth Low Energy) communication program Study 6. Test of Smart sensor(Human Body Detection, Sound) control using BLE(1) Study 7. Test of Smart sensor(Temperature/Humidity/Intensity of Illumination, Pulse) control using BLE (2) Study 8. Test of Smart sensor(Ultrasonic) control using Bluetooth(1) Study 9. Test of Smart sensor(Rain/Steam, Soil Humidity, Dust) control using Bluetooth(2) Study 10. Test of Smart sensor(Tilt, Gyro) control using Bluetooth(3) Study 11. Test of Motor Controlling Study 12. Test of Smart lamp controlling Study 13. Test of Smart Air conditioning Study 14. Test of Smart Lamp controlling using the Light Sensor Study 15. Test of Motor controlling using the Dust Sensor Study 16. Intruder Detecting System