

PlutoconDK DATA SHEET

Bluetooth® Low-Energy Sensor Beacon

PlutoconDK

Bluetooth® Low-Energy Sensor Beacon

Key Features

Broadcast data packets based on Bluetooth LE® (4.0)

Compatible with all Bluetooth 4.0 (BLE) devices

Compatible with Apple iBeacon™ standard

Configurable parameters

- UUID, Major and Minor values
- Device name
- Transmission power level
- Advertising intervals

0C to +60C operating range

Power

- Support rechargeable batteries
- Support USB power

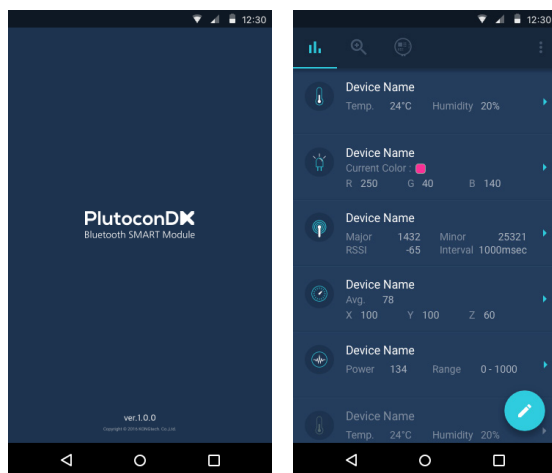
Unique Identification UUID based on GPS data

- Plutocon UUID: Header-Latitude-Longitude-Spair

Cloud-based Data backup

Over-The-Air firmware upgrade (OTA DFU)

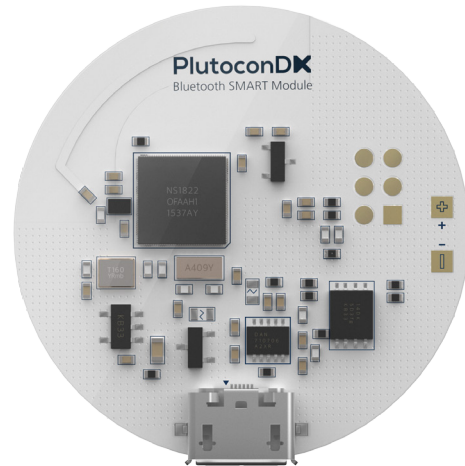
PlutoconDK Application



Android App available on Google Play™

- Android 5.0 and newer devices

Rendering Image



PlutoconDK Demo Application (Available on May)

- Proximity Demo App
- Notify Demo App
- Distance Demo App
- Coverage and distance Demo App
- Movement sensing Demo App
- Over-The-Air firmware upgrade Demo App
- Indoor Location Demo App

SDK

Support Plutocon SDK

 <http://github.com/plutocon>

Applications

- Wireless Monitoring System
- CMS (control and monitor subsystem)
- Indoor / outdoor navigation
- Wearable Device
- Biotrepy
- Enter / exit events
- Central system
- Healthcare and patient tracking
- Interactive tours and exhibitions
- Home/Hotel Control System

General Description

Size

60mm diameter

Color

PCB: White, Gold plating
Silk: Majolica Blue or Black

Bluetooth 4.0

Nordic nRF51822 Bluetooth low energy
ARM Cortex™-M0 32bit Processor

Memory

256kB embedded flash program memory
16kB RAM

Power Supply

+2.5V to +16V

Antenna

2.4Ghz transceiver
Omnidirectional antenna up to 70meter

Operating Range

+10C to +60C operating range

Broadcasting Profile

KongTech Plutocon (Based on Apple iBeacon)

2.4GHz Multi-protocol Radio

-30dBm output power in whisper mode
-96dBm RX sensitivity at 250kbps
-90dBm RX sensitivity at 1Mbps
-85dBm RX sensitivity at 2Mbps
2Mbps, 1Mbps and 250kbs supported data rates
Excellent co-existence performance

Broadcasting Interval

100msec to 5000msec (0.1sec to 5sec)

Transmit Power

-30dBm to +4dBm

System

PlutoconOS
Support Over the Air Device Firmware Upgrade

Supported OS

Android 4.3+ or newer

PlutoconDK UUID Packets Structure

Byte	Packets Structure	Default
4	Header	1F4AE6A0
2	Latitude	37
3		402136
2	Longitude	127
3		107018
2	Spare	0000
Plutocon default: 1F4AE6A0-0037-4021-3601-271070180000		

*Header: Plutocon UUID Header (fixed: 1F4AE6A0)

*GPS Latitude: Device Latitude data

*GPS Longitude: Device Longitude data

*Default GPS Data: 37.402136, 127.107018

*Spare: Custom data

Plutocon DK Model Information

Humidity / Temperature sensor
High Accuracy Digital Humidity and Temperature Sensor Relative Humidity (RH) Operating Range 0% to 100% <ul style="list-style-type: none">• 14 Bit Measurement Resolution• Relative Humidity Accuracy $\pm 3\%$• Temperature Accuracy $\pm 0.2\text{ }^{\circ}\text{C}$
Accelerometer sensor
Ultralow power Power can be derived from coin cell battery 10 nA standby current <ul style="list-style-type: none">• 12-bit resolution• High resolution: 1 mg/LSB

PlutoconDK Model Information

Index	Name	Function	Shape	Bluetooth	Charge	H/W Version
1	PlutoconDK - Beacon	Beacon	Circle	Support	Support	1.0.0
2	PlutoconDK - TEMP	Temperature, humidity	Circle	Support	Support	1.0.0
3	PlutoconDK - ACC	Acceleration	Circle	Support	Support	1.0.0
4	PlutoconDK - EMG	Electromyogram	Triangle	Support	Support	1.0.0
5	PlutoconDK - MIC	Microphone	Circle	Support	Support	1.0.0
6	PlutoconDK - HRM	Heart rate monitoring	Circle	Support	Support	1.0.0
7	PlutoconDK - Light & UV	Lux, UV	Circle	Support	Support	1.0.0
8	PlutoconDK - PIR	Pyroelectric Infrared Radial	Circle	Support	Support	1.0.0
9	PlutoconDK - TOUCH	Force Sensitive Resistor	Rectangle	Support	Support	1.0.0
10	PlutoconDK - REMOTE	Remote controller	Circle	Support	Support	1.0.0
11	PlutoconDK - VOCS	Volatile Organic Compounds	Circle	Support	Support	1.0.0
12	PlutoconDK - HID	Human interface device	Rectangle	Support	Support	1.0.0
13	PlutoconDK - ARS	Attitude Reference System	Circle	Support	Support	1.0.0
14	PlutoconDK - LONG RANGE	High efficiency antenna beacon	Circle	Support	Support	1.0.0
15	PlutoconDK - LCD	Text oled	Circle	Support	Support	1.0.0

PlutoconDK Architecture

Wireless	Power	Funtion
Bluetooth 4.1 Low Energy	Power (USB) Charge (Li-Po Battery)	Various sensor or Output device

Services

The Beacon has seven services implemented by default. Two of these services are standard Bluetooth SIG's with 16-bits Universally Unique Identifiers (UUID), and the other three are custom services with generated 128-bits UUIDs. Every service contains one or more characteristics which keep set information or control values. All services and characteristics are shown in below in order of appearance.

Service1: GAP		
Generic Access		0x1800
1	Device Name	0x2A00
2	Appearance	0x2A01
3	Peripheral Preferred Connection Parameters	0x2A04

Service2: GATT		
Generic Attribute		0x1801

Service3: Device Information		
Unknown Service		9FD41000-E46F-7C9A-57B1-2DA3-65E18FA1
1	Manufacturer Name String	9FD41001-E46F-7C9A-57B1-2DA3-65E18FA1
2	Model Number String	9FD41002-E46F-7C9A-57B1-2DA3-65E18FA1
3	Unknown Service	9FD41003-E46F-7C9A-57B1-2DA3-65E18FA1
4	Unknown Service	9FD41004-E46F-7C9A-57B1-2DA3-65E18FA1

Service4: Beacon Service		
Unknown Service		9FD41000-E46F-7C9A-57B1-2DA3-65E18FA1
1	Unknown Service	9FD42001-E46F-7C9A-57B1-2DA3-65E18FA1
2	Unknown Service	9FD42002-E46F-7C9A-57B1-2DA3-65E18FA1
3	Unknown Service	9FD42003-E46F-7C9A-57B1-2DA3-65E18FA1
4	Unknown Service	9FD42004-E46F-7C9A-57B1-2DA3-65E18FA1
5	Unknown Service	9FD42005-E46F-7C9A-57B1-2DA3-65E18FA1
6	Unknown Service	9FD42006-E46F-7C9A-57B1-2DA3-65E18FA1

Service5: Sensor Service		
Generic Access		9FD45000-E46F-7C9A-57B1-2DA3-65E18FA1
1	Unknown Service	9FD45001-E46F-7C9A-57B1-2DA3-65E18FA1
2	Unknown Service	9FD45002-E46F-7C9A-57B1-2DA3-65E18FA1
3	Unknown Service	9FD45003-E46F-7C9A-57B1-2DA3-65E18FA1

Service6: Battery Service		
Unknown Service		9FD43000-E46F-7C9A-57B1-2DA3-65E18FA1
1	Unknown Service	9FD43001-E46F-7C9A-57B1-2DA3-65E18FA1

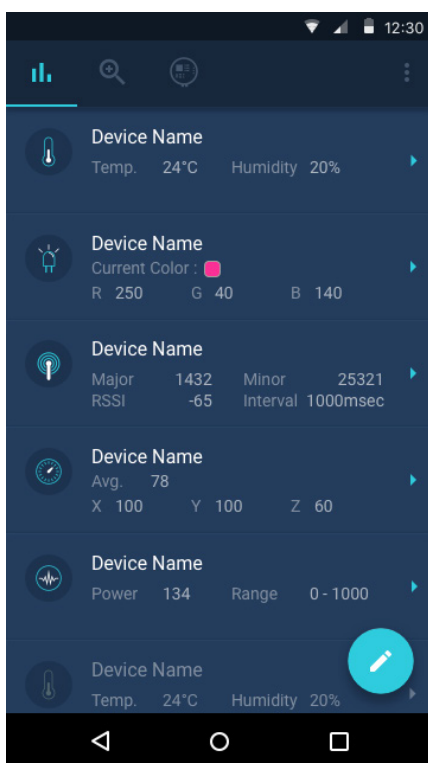
Service7: OTA DFU Service		
Generic Access		9FD44000-E46F-7C9A-57B1-2DA3-65E18FA1
1	DFU Packet	9FD44001-E46F-7C9A-57B1-2DA3-65E18FA1
2	DFU Control Point	9FD44002-E46F-7C9A-57B1-2DA3-65E18FA1
3	DFU Version	9FD44003-E46F-7C9A-57B1-2DA3-65E18FA1

PlutoconDK Developer app for Android

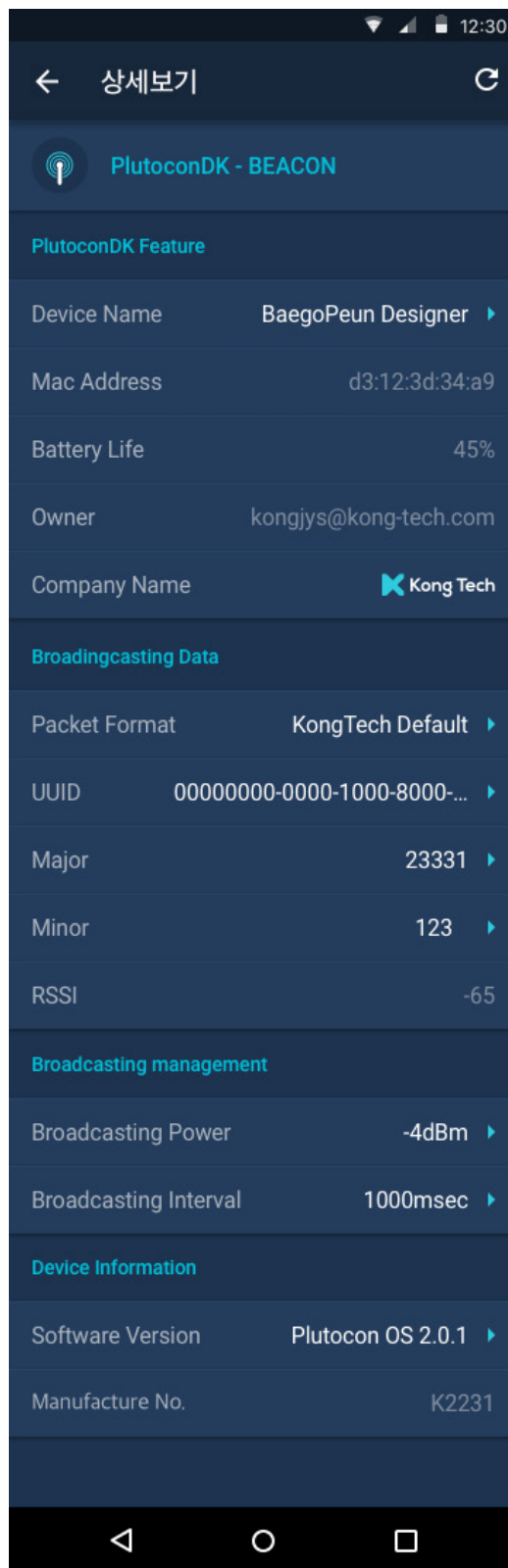
PlutoconDK application is available for download in the Google Play store online.
The app provides functionality for scanning, ranging, and configuring beacons.



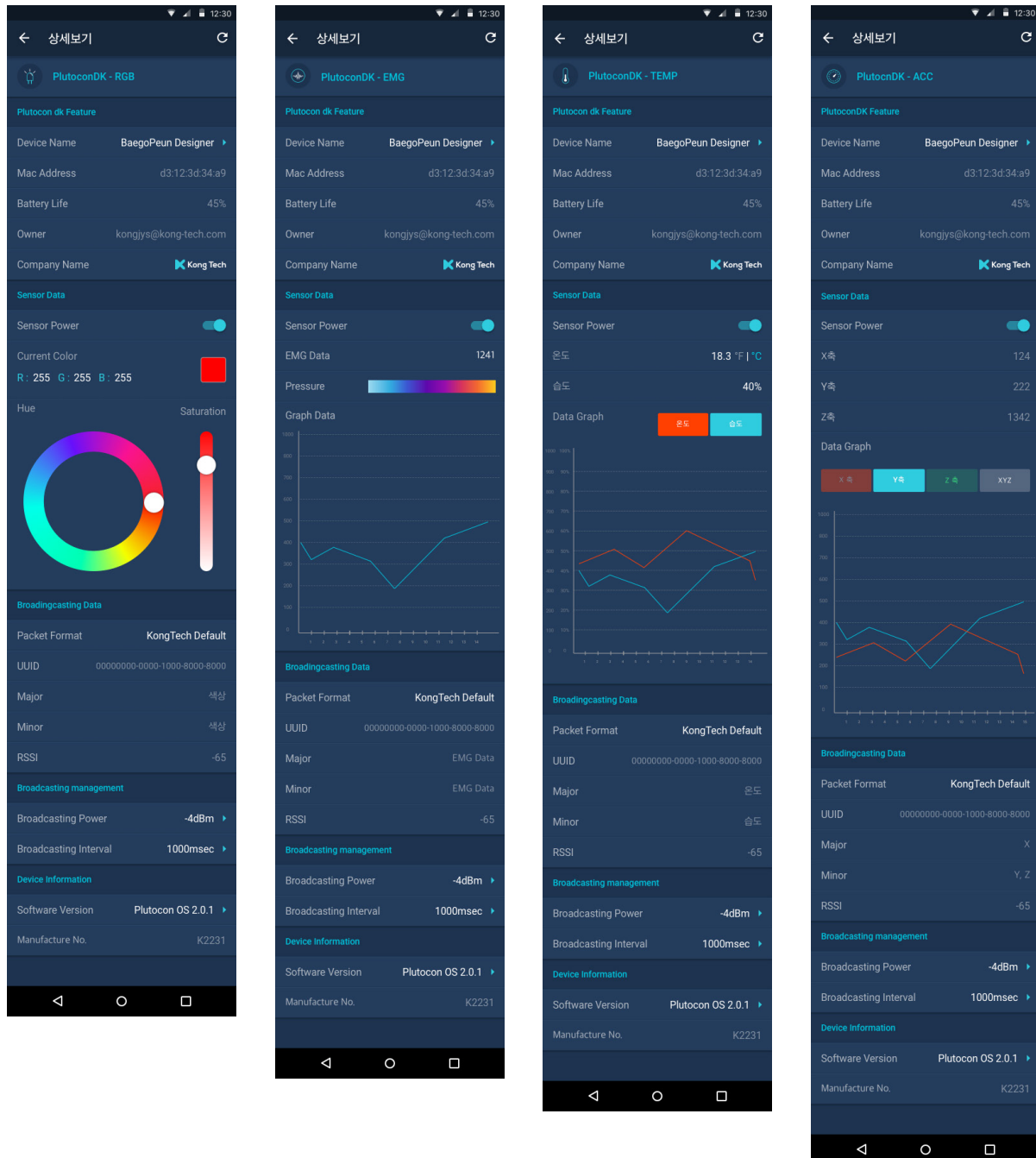
PlutoconDK Intro



PlutoconDK Scan



Edit PlutoconDK Data



PlutoconDK Sensor Data Monitoring UI



PlutoconDK Sensor Icon

PlutoconDK SDK for Android

Condition

Android min-sdk : 21

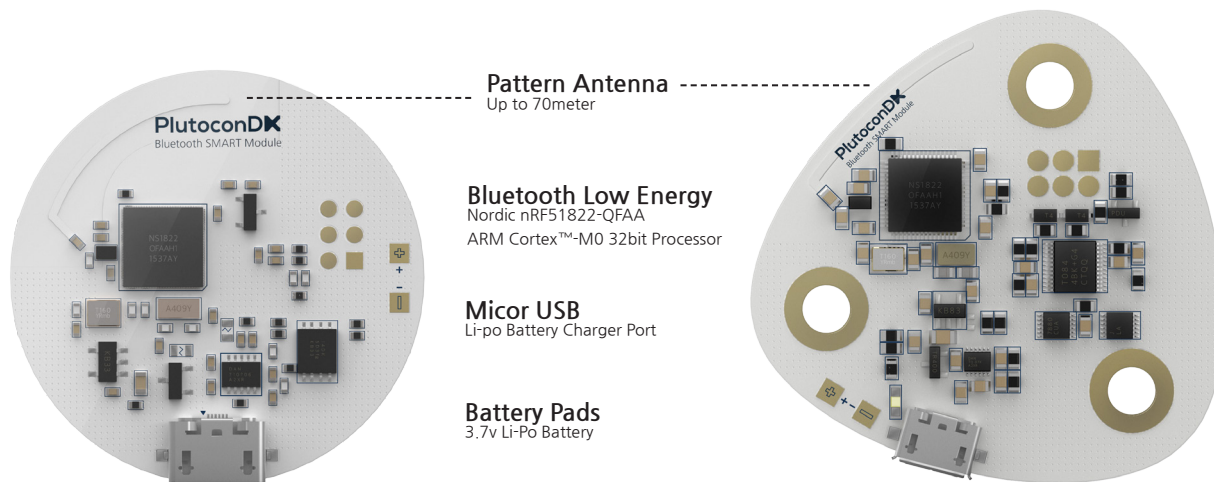
IDE : Android Studio

Link: <http://github.com/plutocon> 

Scan/Monitoring
1. Declaration
<pre>final SensorManager sensorManager = new SensorManager(this);</pre>
2. Initialization
<pre>sensorManager.connectService(new SensorManager.OnReadyServiceListener() { @Override public void onReady() { //do something } });</pre>
3. Scan result
<pre>sensorManager.setOnMonitoringSensorListener(new SensorManager.OnMonitoringSensorListener() { @Override public void onSensorDiscovered(Sensor sensor, List<Sensor> sensors) { } });</pre>
4. Scan start
<pre>sensorManager.startMonitoring(SensorManager.MONITORING_FOREGROUND); sensorManager.startMonitoring(SensorManager.MONITORING_BACKGROUND);</pre>
5. Get beacon data
<pre>if(sensor.getType() == Sensor.TYPE_BEACON) { Beacon beacon = (Beacon)sensor; String name = beacon.getName(); String address = beacon.getMacAddress(); ParcelUuid uuid = beacon.getUUID(); int minor = beacon.getMinor(); int major = beacon.getMajor(); int rssi = beacon.getRSSI(); int interval = beacon.getInterval(); long lastSeenMiils = beacon.getLastSeenMillis(); }</pre>
6. Scan stop
<pre>sensorManager.stopMonitoring();</pre>
7. Service close
<pre>sensorManager.close();</pre>

Connect & Edit Information
1. Initialization
SensorConnection sensorConnection = new SensorConnection(sensor);
2. Connect
<pre>sensorConnection.connect(new SensorConnection.OnConnectionStateChangeCallback() { @Override public void onConnectionStateDisconnected() { //do something; } @Override public void onConnectionStateConnected() { //do something; } });</pre>
3. Get Plutocon information
<pre>sensorConnection.getAdvertisingInterval(); sensorConnection.getBatteryVoltage(); sensorConnection.getBroadcastingPower(); sensorConnection.getHardwareVersion(); sensorConnection.getSoftwareVersion(); sensorConnection.getUUID();</pre>
4. Edit Plutocon information
<pre>SensorEditor editor = sensorConnection.getSensorEditor(); editor.setProperty(uuid, value) .setUUID(uuid) .setOnEditCompleteCallback(new SensorEditor.OnEditCompleteCallback() { @Override public void onEditCompleteCallback() { } }); editor.commit();</pre>
5. Disconnect
<pre>sensorConnection.disconnect();</pre>

Product Information



PLUTOCON	(Beacon Type)	(Manufacture Code)	(Housing type)
Base Part Number	PB: Proximity SB: Sensor DK: Developer Kit UT: Usb Type	Hardware Version + Firmware Version	N01: Nomal, logo N02: Nomal, no slik P01: Only PCB, Version C01: Customer, Versio

Name Information

Name	Description	Sensor
PlutoconDK - Beacon	Proximity beacon, Developer samples	3
PlutoconDK - ACC	Proximity beacon, Industry	500
PlutoconDK - Beacon	Proximity beacon, Industry, Only PCB	1000
PlutoconDK - Beacon	Proximity beacon, Custom	100
PlutoconDK - Beaconx	Sensor beacon, Developer samples	3
PlutoconDK - Beacon	Sensor beacon, Industry	500
PlutoconDK - Beacon	Sensor beacon, Industry, Only PCB	1000
PlutoconDK - Beacon	Sensor beacon, Custom	100
PlutoconDK - Beacon	Developer Kit samples	1
PlutoconDK - Beacon	Developer Kit samples, Custom	100
PlutoconDK - Beacon	UBS Type beacon, Developer samples	1
PlutoconDK - Beacon	UBS Type beacon, Custom	100

For More Information

www.kong-tech.com
kongtech@kong-tech.com
Copyright © 2016 KONGtech Co., Ltd.

Contact

konglhk@kong-tech.com
B-410, U Space2, 682, Sampyeong-dong, Bundang-gu,
Seongnam-si, Gyeonggi-do, Korea