

# 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

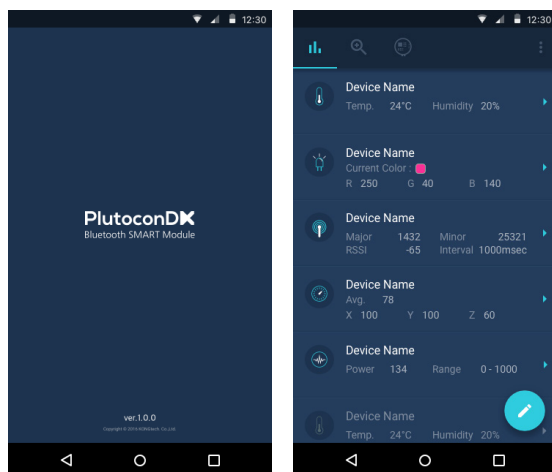
Unique Identification UUID based on GPS data

- Plutocon UUID: Header-Latitude-Longitude-Spair

Cloud-based Data backup

Over-The-Air firmware upgrade (OTA DFU)

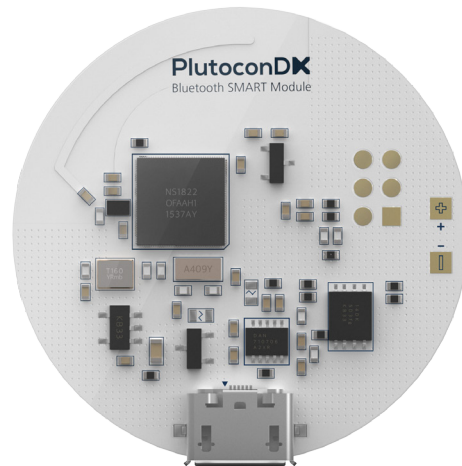
## PlutoconDK Application



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 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 Sensor Information

PlutoconDK-Beacon
Basic Model
PlutoconDK-TEMP
High Accuracy Digital Humidity and Temperature Sensor Relative Humidity (RH) Operating Range 0% to 100% <ul style="list-style-type: none"><li>14 Bit Measurement Resolution</li><li>Relative Humidity Accuracy <math>\pm 3\%</math></li><li>Temperature Accuracy <math>\pm 0.2\text{ }^{\circ}\text{C}</math></li></ul>
PlutoconDK-ACC
Ultralow power Power can be derived from coin cell battery 10 nA standby current <ul style="list-style-type: none"><li>12-bit resolution</li><li>High resolution: 1 mg/LSB</li></ul>
PlutoconDK-EMG
Very Small Size Form High performance Digital Processing <ol style="list-style-type: none"><li>1) Raw Data</li><li>2) Rectified</li><li>3) Smoothing</li></ol>

## 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

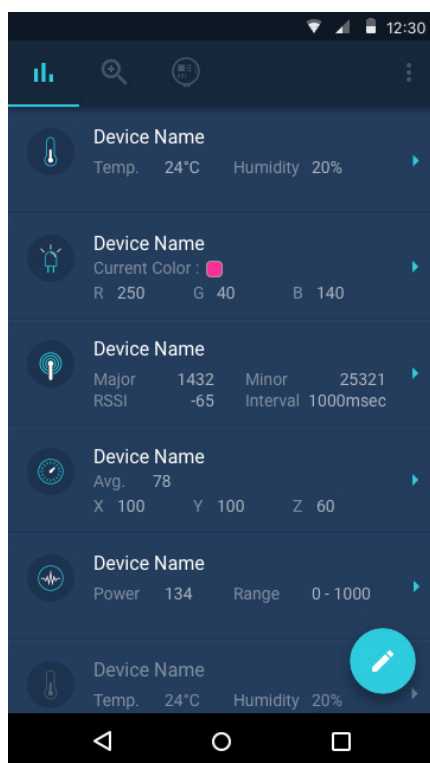
Service7: OTA DFU Service		
Generic Access		9FD44000-E46F-7C9A-57B1-2DA3-65E18FA1
1	DFU Packet	9FD44001-E46F-7C9A-57B1-2DA3-65E18FA1
2	DFU Control Point	9FD44002-E46F-7C9A-57B1-2DA3-65E18FA1
3	DFU Version	9FD44003-E46F-7C9A-57B1-2DA3-65E18FA1

## PlutoconDK Developer app for Android

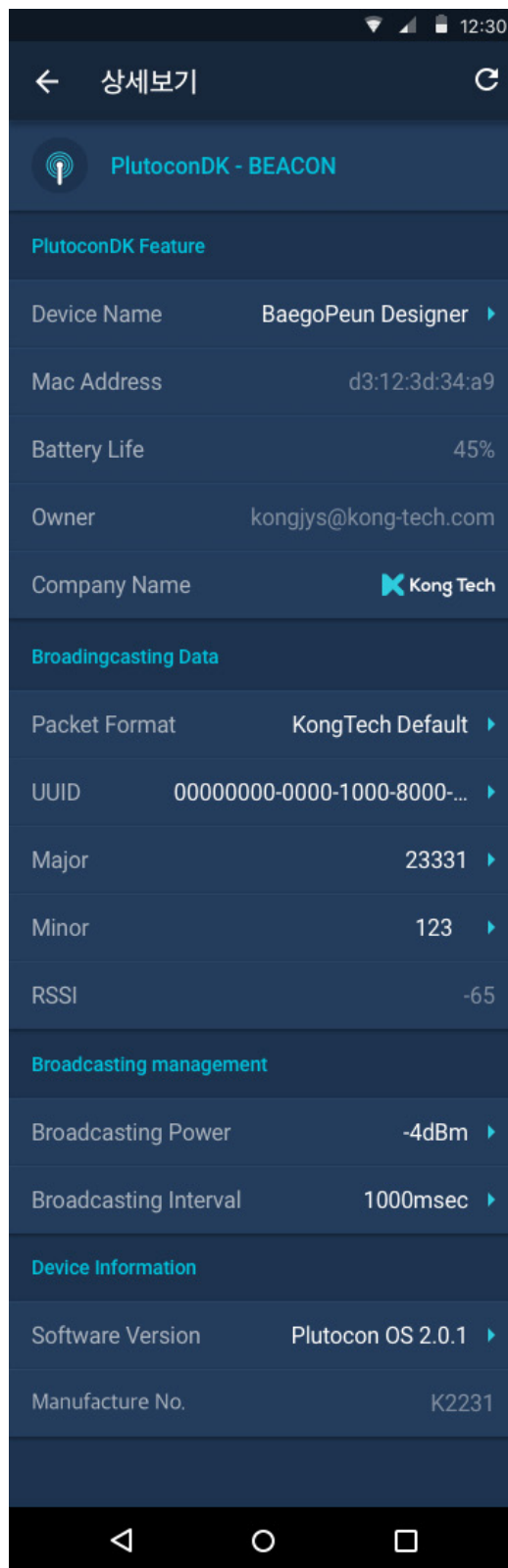
PlutoconDK application is available for download in the Google Play store online.  
The app provides functionality for scanning, ranging, and configuring beacons.



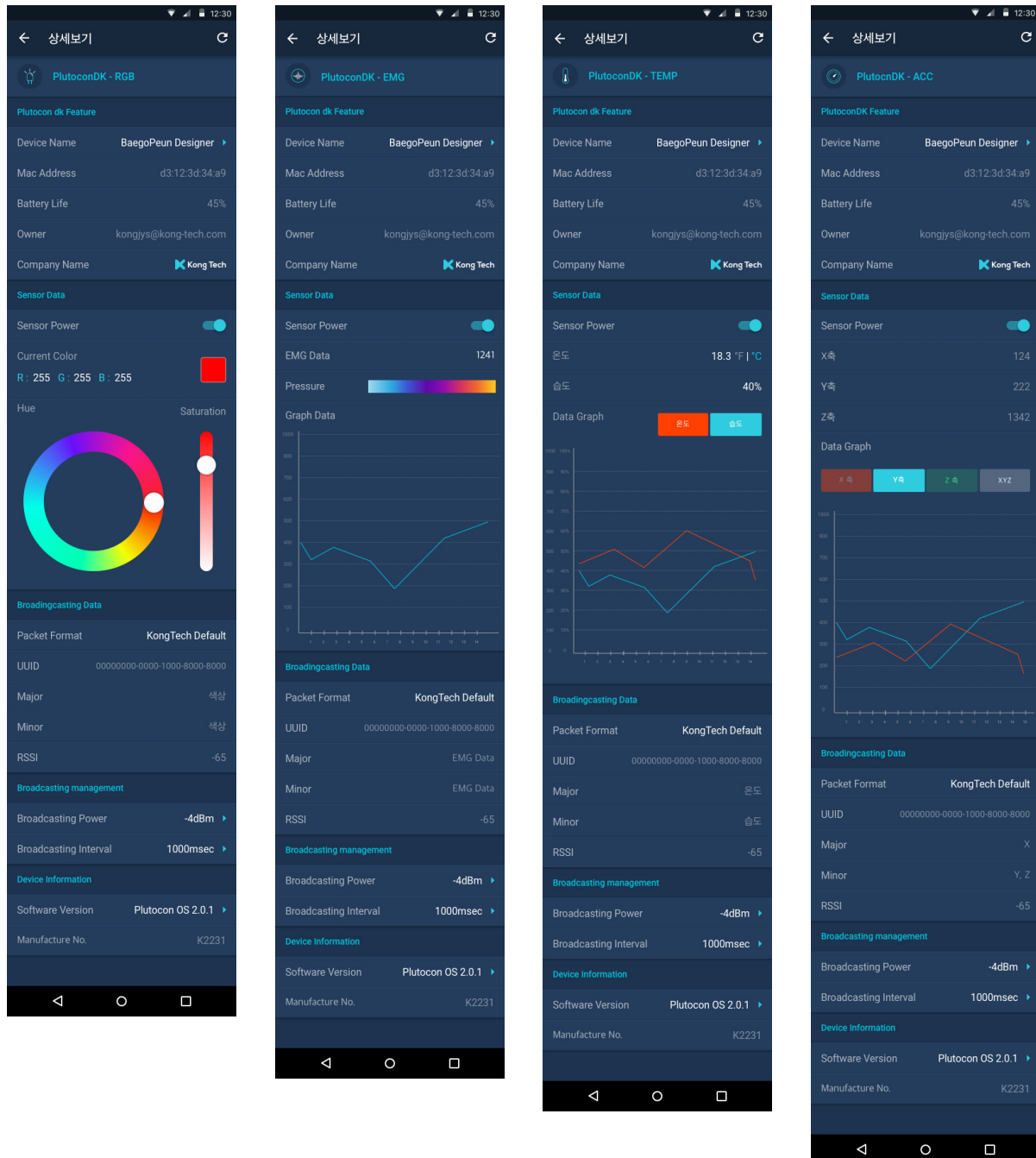
PlutoconDK Intro



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

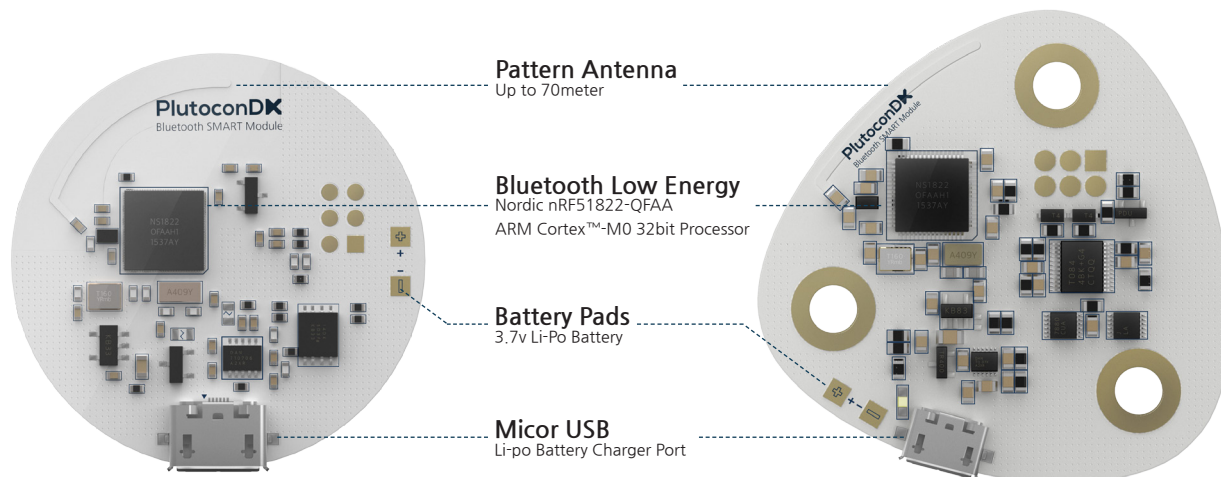
Link: <http://github.com/plutocon> 

Scan/Monitoring
<b>1. Declaration</b>
<pre>final SensorManager sensorManager = new SensorManager(this);</pre>
<b>2. Initialization</b>
<pre>sensorManager.connectService(new SensorManager.OnReadyServiceListener() {     @Override     public void onReady() {         //do something     } });</pre>
<b>3. Scan result</b>
<pre>sensorManager.setOnMonitoringSensorListener(new SensorManager.OnMonitoringSensorListener() {     @Override     public void onSensorDiscovered(Sensor sensor, List&lt;Sensor&gt; sensors) {     } });</pre>
<b>4. Scan start</b>
<pre>sensorManager.startMonitoring(SensorManager.MONITORING_FOREGROUND); sensorManager.startMonitoring(SensorManager.MONITORING_BACKGROUND);</pre>
<b>5. Get beacon data</b>
<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>
<b>6. Scan stop</b>
<pre>sensorManager.stopMonitoring();</pre>
<b>7. Service close</b>
<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 - Beacon	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

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