

# PLUTOCON DATA SHEET

Bluetooth® Low-Energy Proximity Beacon

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Bluetooth® Low-Energy Proximity 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

- Proximity UUID, Major and Minor values
- Device name
- Transmission power level
- Messaging / advertising intervals

Weatherproof Enclosure

- IP-64 rating
- -5C to +60C operating range
- Replaceable CR2477 3V battery

Unique Identification based on GPS data

- Plutocon UUID: Header-latitude-longitude-spare

Protected by Secure Mode / multiple passwords

Over-The-Air firmware upgrade (OTA DFU)

Cloud-based data backup

Over 36 months of battery lifetime on default settings




< PLUTOCON Beacon Image >

## Plutocon Demo Application

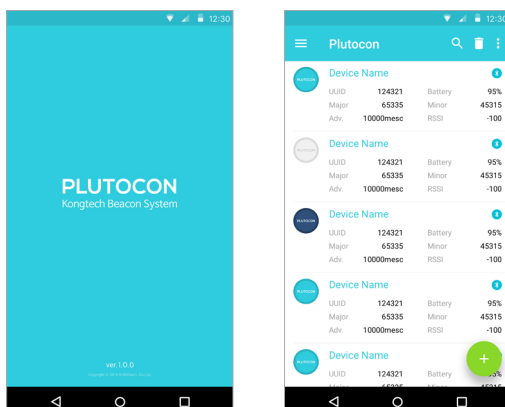
- Proximity Demo App
- Notify Demo App
- Distance Demo App
- Coverage and distance Demo App
- Movement sensing Demo App
- Over-The-Air firmware upgrade Demo App
- Indoor Location Demo App

## SDK

Support PLUTOCON SDK

 <http://github.com/plutocon>

## Plutocon Application



Android App available on Google Play™

- Android 5.0 and newer devices

## Applications

- Micro-location and movement tracking
- Indoor / outdoor navigation
- Contextual offer promotion and advertising
- Customer loyalty and reward programs
- Enter / exit events
- Providing menus, catalogs, and inventory overviews
- Inventory tracking and logistics
- Healthcare and patient tracking
- Interactive tours and exhibitions
- City games and geocaching

## General Description

### Size

60mm diameter

### Color

White, Majolica Blue, Blue Radiance  
(Custom colors available)

### Plutocon Type

Proximity Beacon: Temperature sensor  
Sensor Beacon: Humidity/Temperature/Motion Sensor

### Bluetooth 4.0

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

### Memory

256kB embedded flash program memory  
16kB RAM

### Power Supply

Default battery life 3 years  
Maximum battery life 6+ years  
Replaceable CR2477 Coin Battery  
Battery voltage: 3V

### Antenna

2.4Ghz transceiver  
Omnidirectional antenna up to 70meter

### Operating Range

-5C to +60C operating range  
Weather proof (IP-64 rating)

### Broadcasting Profile

KongTech Plutocon (Based on Apple iBeacon)  
Apple iBeacon  
Google EddyStone

### 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 250kbps supported data rates  
Excellent co-existence performance

### Broadcasting Interval

100msec to 12000msec (0.1sec to 12sec)

### Transmit Power

-30dBm to +4dBm

### Plutocon Packets Structure

| Byte  | Packets Structure | Default  |
|---|-------------------|----------|
| 4   | Header            | 1F4AE6A0 |
| 2   | Latitude          | 37       |
| 3   |                   | 402136   |
| 2   | Longitude         | 127      |
| 3   |                   | 107018   |
| 2   | Spare             | 0000     |
| Plutocon default:<br>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 Packets Structure

| Humidity / Temperature sensor  |
|--|
| High Accuracy Digital Humidity and Temperature Sensor<br>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> |
| Accelerometer sensor   |
| Ultralow power<br>Power can be derived from coin cell battery<br>10 nA standby current <ul style="list-style-type: none"><li>• 12-bit resolution</li><li>• High resolution: 1 mg/LSB</li></ul>   |

### Certifications & Tests

KC, IP-64

### Supported OS

Android 4.3+ or newer

## 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 |

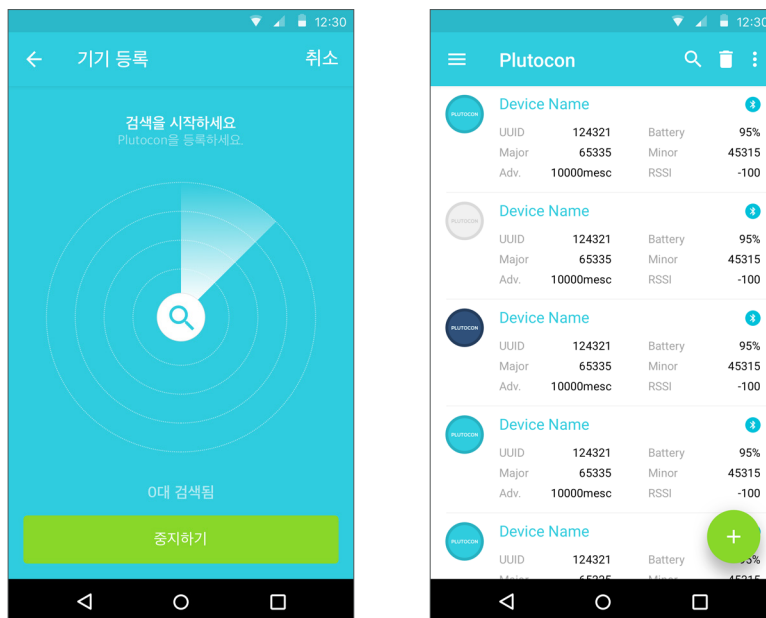
| Service6: Battery Service |                 |                                       |
|---------------------------|-----------------|---------------------------------------|
| Unknown Service           |                 | 9FD43000-E46F-7C9A-57B1-2DA3-65E18FA1 |
| 1                         | Unknown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

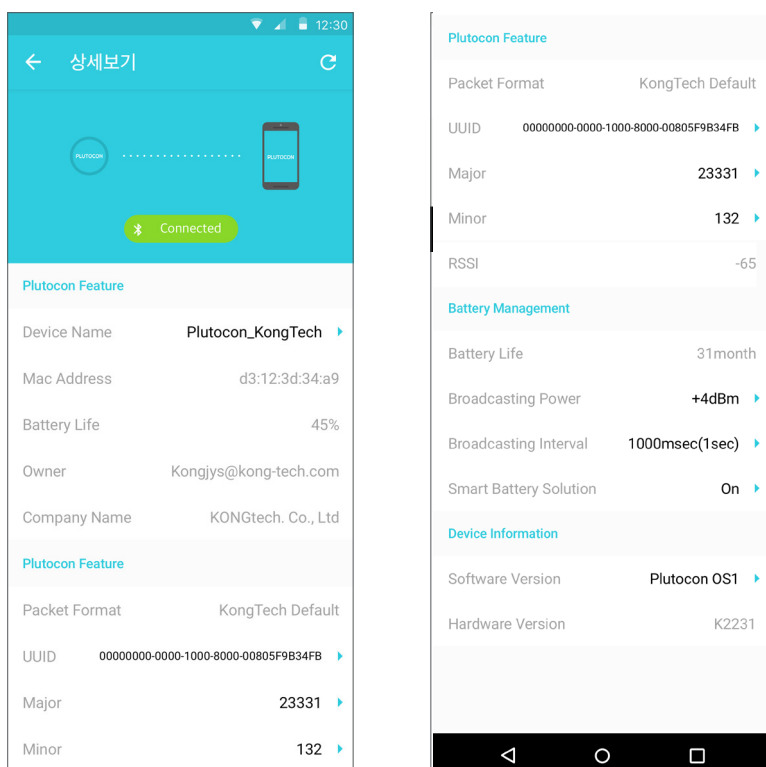
## PLUTOCON Developer app for Android

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

### Scanning beacons / Register beacons



### Edit Plutocon Data



## PLUTOCON SDK for Android

### Condition

Android min-sdk : 21

IDE : Android Studio

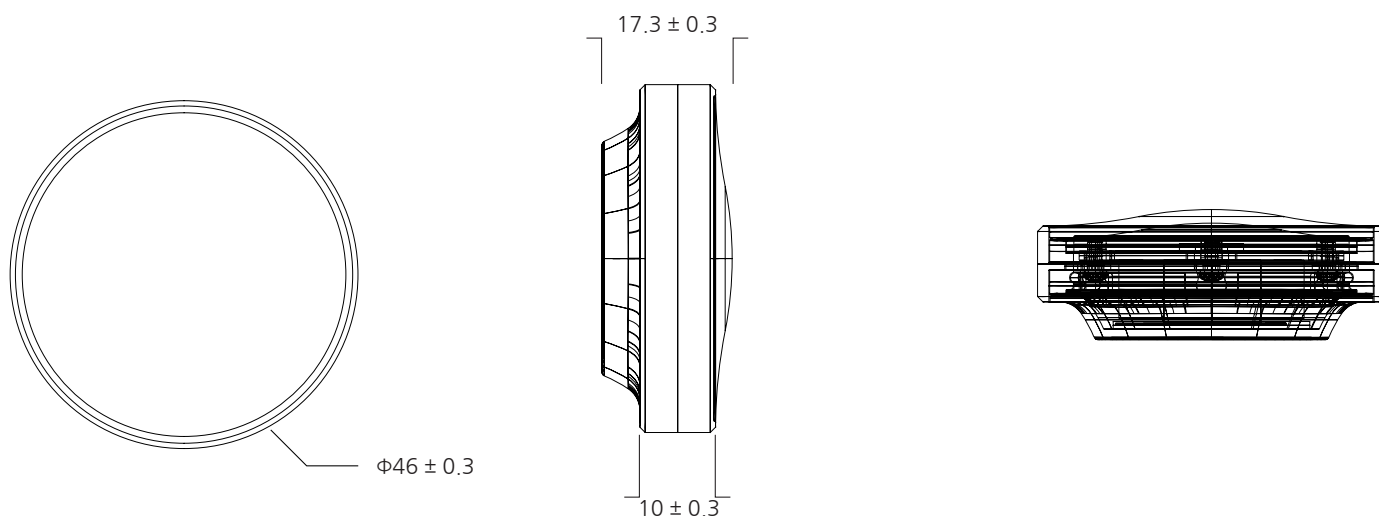
Link: <http://github.com/plutocon> 

| Scan/Monitoring   |
|---|
| <b>1. Declaration</b>   |
| <pre>final SensorManager sensorManager = new SensorManager(this);</pre>   |
| <b>2. Initialization</b>  |
| <pre>sensorManager.connectService(new SensorManager.OnReadyServiceListener() {<br/>    @Override<br/>    public void onReady() {<br/>        //do something<br/>    }<br/>});</pre>   |
| <b>3. Scan result</b>   |
| <pre>sensorManager.setOnMonitoringSensorListener(new SensorManager.OnMonitoringSensorListener() {<br/>    @Override<br/>    public void onSensorDiscovered(Sensor sensor, List&lt;Sensor&gt; sensors) {<br/>    }<br/>});</pre>   |
| <b>4. Scan start</b>  |
| <pre>sensorManager.startMonitoring(SensorManager.MONITORING_FOREGROUND);<br/>sensorManager.startMonitoring(SensorManager.MONITORING_BACKGROUND);</pre>  |
| <b>5. Get beacon data</b>   |
| <pre>if(sensor.getType() == Sensor.TYPE_BEACON) {<br/>    Beacon beacon = (Beacon)sensor;<br/><br/>    String name = beacon.getName();<br/>    String address = beacon.getMacAddress();<br/><br/>    ParcelUuid uuid = beacon.getUUID();<br/><br/>    int minor = beacon.getMinor();<br/>    int major = beacon.getMajor();<br/>    int rssi = beacon.getRSSI();<br/>    int interval = beacon.getInterval();<br/><br/>    long lastSeenMiils = beacon.getLastSeenMillis();<br/>}</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() {<br/>    @Override<br/>    public void onConnectionStateDisconnected() {<br/>        //do something;<br/>    }<br/><br/>    @Override<br/>    public void onConnectionStateConnected() {<br/>        //do something;<br/>    }<br/>});</pre>     |
| 3. Get Plutocon information  |
| <pre>sensorConnection.getAdvertisingInterval();<br/>sensorConnection.getBatteryVoltage();<br/>sensorConnection.getBroadcastingPower();<br/>sensorConnection.getHardwareVersion();<br/>sensorConnection.getSoftwareVersion();<br/>sensorConnection.getUUID();</pre>   |
| 4. Edit Plutocon information   |
| <pre>SensorEditor editor = sensorConnection.getSensorEditor();<br/>editor.setProperty(uuid, value)<br/>    .setUUID(uuid)<br/>    .setOnEditCompleteCallback(new SensorEditor.OnEditCompleteCallback() {<br/>        @Override<br/>        public void onEditCompleteCallback() {<br/>        }<br/>    });<br/>editor.commit();</pre> |
| 5. Disconnect  |
| <pre>sensorConnection.disconnect();</pre>  |



## Product Outline Dimensions



## ORDERING INFORMATION

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

| Order Number        | Description                          | Minimum Order Quantity |
|---------------------|--------------------------------------|------------------------|
| PLUTOCON-PB2231-N01 | Proximity beacon, Developer samples  | 3                      |
| PLUTOCON-PB3341-N02 | Proximity beacon, Industry           | 500                    |
| PLUTOCON-PB3341-P01 | Proximity beacon, Industry, Only PCB | 1000                   |
| PLUTOCON-PB2231-C01 | Proximity beacon, Custom             | 100                    |
| PLUTOCON-SB2231-N01 | Sensor beacon, Developer samples     | 3                      |
| PLUTOCON-SB3341-N02 | Sensor beacon, Industry              | 500                    |
| PLUTOCON-SB3341-P01 | Sensor beacon, Industry, Only PCB    | 1000                   |
| PLUTOCON-SB2231-C01 | Sensor beacon, Custom                | 100                    |
| PLUTOCON-DK1172-P01 | Developer Kit samples                | 1                      |
| PLUTOCON-DK1172-C01 | Developer Kit samples, Custom        | 100                    |
| PLUTOCON-UT6632-P01 | UBS Type beacon, Developer samples   | 1                      |
| PLUTOCON-UT6632-P01 | UBS Type beacon, Custom              | 100                    |

## For More Information

[www.kong-tech.com](http://www.kong-tech.com)

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