



DX-CP27

Small Size Low Power Bluetooth Beacon

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Update Record

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1. Introduction

1.1. Overview

DX-CP27 Bluetooth beacon small size is a low-power Bluetooth product created by Shenzhen Daxia Longque Technology Co., Ltd. for asset management, indoor positioning and advertising push. It complies with the Bluetooth BLE 5.1 specification and supports iBeacon and Eddystone. It adopts a card-type design and PC material shell, powered by lithium batteries, has a long service life, can provide SDK and technical services, and can be OEM and ODM according to customer needs .

1.2. Features

- DIALOG 14531 main control chip
- ARM Cortex-M0 processor
- Bluetooth BLE 5.1 protocol +
- Low power consumption, low cost
- Working power consumption: 22.13 uA
- Use life: 1 year
- Lithium battery powered
- Open visual communication distance: 100-120 m
- Support iBeacon & Eddystone
- Support 6 UUID
- Small size
- Protection level: IP67



1.3. Bluetooth default parameters

- Bluetooth name: CP27-XX (XX: the last two bytes of the MAC address)
- Transmit power: +2.5 dBm
- Broadcast interval: 500 ms

- Default iBeacon broadcast packet data:

UUID : E2C56DB5-DFFB-48D2-B060-D0F5A71096E0

MAJOR : 0

MINOR : 0

- Default Eddystone broadcast packet data:

UID: Namespace id: e5a4a7e5a48f31323334

Instance id: 44584c29191a

URL : URL : http://www.szdx-smart

- Default restart password: dx1234
- Default factory reset password: 1234

Table 1: Basic parameter table

Parameter name	Details	Parameter name	Details
Chip Model	DA14531	model	DX-CP27
Bluetooth Specifications	BLE 5.1	protocol	GATT, iBeacon , Eddystone
Battery Model	CR2032	Broadcast Interval	100ms ~ 1000ms
Battery level	210mah	Transmit power	-19.5~+2.5dBm
Power supply mode	Button battery	Sensitivity	-94dBm@0.1%BER
Modulation	GFSK	Frequency band	2.402GHz -2.480GHz ISM band
RF input impedance	50Ω	Frequency Hopping and Channels	1600 hops/s 2MHz space 40 channels
Antenna interface	Onboard antenna	Product size	40 * 25 * 5.6 MM
Operating temperature	MIN:-40°C - MAX:+85°C	humidity	10%-95% non-condensing



2. Product Diagram



Figure 1: CP27 product diagram

3. Hardware Construction Description

3.1. KEY

Table 2: KEY function definition table

Operation Method	result
Long press the KEY pin for at least 6 seconds and then release it	Power off
Click the KEY for 1S and then release it	Power on

Remark:

Default low power mode when powering on

3.2. Indicator Lights

- Connection status indicator: The light is off when not connected, the red light is on during connection, and the light is off after successful connection



- After powering on/starting up, the indicator light flashes once
- After powering off, the connection status indicator flashes twice

4. Electrical Characteristics And Reliability

4.1. Operating and storage temperature

Table 3: Operating and storage temperature table

parameter	Minimum	typical	Maximum	unit
Normal operating temperature	-40	-	40	°C
Storage temperature	-50	-	150	°C

4.2. Current consumption

Table 4: Power consumption table

model	Current	unit
Closed status	0.8	uA
Working status	22.13	uA

Remark

The power consumption in the above table is the result of testing at a transmit power of +2.5dBm and a broadcast interval of 500ms .

For reference only.

The power consumption of CP27 varies with different transmission powers and broadcast intervals.

The specific power consumption is subject to actual conditions.

4.3. RF characteristics

Table 5: RF characteristics

Function	Value
BLE Transmit Power	-19.5 ~2.5 dBm
BLE sensitivity	-94 dBm@0.1%BER



4.4. Distance measurement table

Table 6: Distance measurement

Test Model	Connection Device	Connection distance	Broadcast distance	unit
CP27	iPad	67.2	122.2	m
	Oneplus ACE 2 Pro	67.2	146.2	m

Remark

Test default parameters: (transmit power: +2.5dBm broadcast interval: 500ms)

4.5. Electrostatic protection

In product applications, static electricity generated by factors such as human body static, electrostatic friction between microelectronics, etc., may discharge through various channels to the module, potentially causing some damage to the module. Therefore, ESD protection should be given due attention. ESD protection measures should be taken throughout the process of research and development, production assembly, and testing, especially in product design. For example, anti-static protection should be added at circuit design interfaces and points that are susceptible to damage or interference from electrostatic discharge, and anti-static gloves should be worn during production.

Table 7: ESD withstand voltage of module pins

Test interface	Contact discharge	Air discharge	unit
VBAT and GND	+ 2	+ 4	kV
Main antenna interface	+2	+4	kV

5. APP Usage

5.1. The method of modify device parameters on mobile APP

5.1.1. Android APP

1. Download and install DX-SMART.apk from en.szdx-smart.com on Android phone;
2. Open DX-SMART APP and open the Beacon interface to search for connections ;

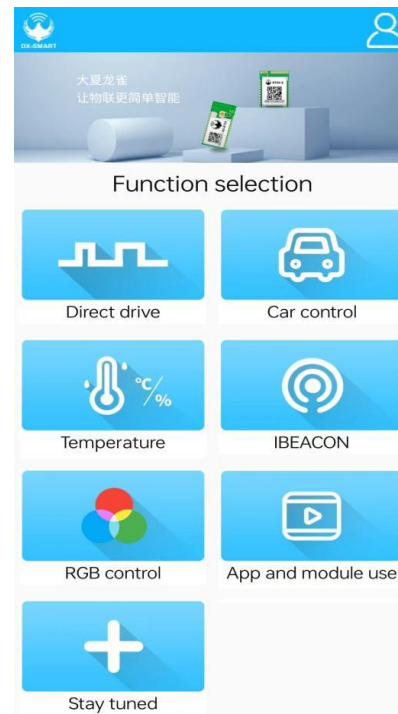


3. After searching for the Bluetooth name, click on the name to connect;
4. After connecting, you can modify the iBeacon parameters;
5. After modifying the format and range according to the specification, click Restart, enter the restart password, and complete the modification;

(Android APP interface as shown in Figure 2)



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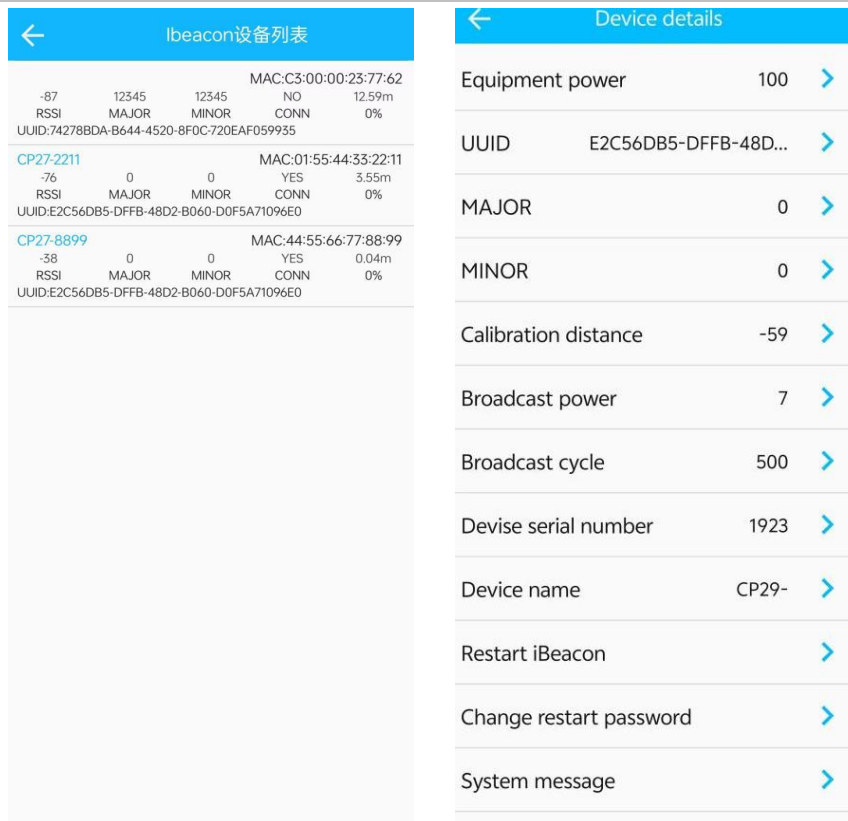


Figure 2: Android APP interface

5.1.2. IOS APP

1. Download "DX-SMART" APP from App Store;
2. Open the Beacon interface to search for connections and modify parameters;
3. After searching for the Bluetooth name, click on the name to connect;
4. After connecting, you can modify the iBeacon and Eddystone parameters;
5. After modifying the format and range according to the specification, click Restart, enter the restart password, and complete the modification;

(IOS APP interface is shown in Figure 3)



The screenshot displays the iOS application interface for managing Bluetooth beacons. It is divided into several sections:

- Feature Selection:** A top section with a header "DX-Smart—Stable wireless like wired" and a sub-header "DX-Smart wireless transmission is as stable as wired!". Below this are five feature selection buttons: "Transmission" (Bluetooth icon), "BEACON" (Beacon icon), "QR code connect" (QR code icon), "NFC auto-connect" (NFC icon), and "Stay tuned" (plus sign icon).
- iBeacon details:** A screen with a blue header and two tabs: "iBeacon" (selected) and "Eddystone". It lists various settings:
 - Set battery level: 100%
 - UUID: E2C56DB5-DFFB-48D2-B060-D0F5A71096E0 >
 - MAJOR: 0 >
 - MINOR: 0 >
 - Check distance: -59 >
 - Advertisement power: 7 >
 - Advertisement cycle: 5 >
 - Set serial number: 1478 >
 - Set name: CP29- >
 - Restart iBeacon: >
 - Set restart password: >
 - Restore factory settings: >
- Beacon 设备列表 (Beacon Device List):** A screen with a blue header and a list of three beacon devices:
 - CP29-AA48:** RSSI: -62, Tx: -19.5dBm, MAJOR: 0, MINOR: 0, CONN: YES, 0%, 3.98m. Details include Namespace id (e5a4a7e5a48f31323334), Instance id (44584c29191a), RSSI@0m (-24dBm), URL (http://www.szdx-smart, RSSI@0m, -24dBm), and TLM (Battery voltage: 3313mV, Temperature: 25°C, Broadcast count: 215574, Uptime: 1天+05:56:22).
 - CP27-8899:** RSSI: -62, Tx: -19.5dBm, MAJOR: 0, MINOR: 0, CONN: YES, 0%, 3.98m. Details include URL (http://www.szdx-smart, RSSI@0m, -24dBm) and TLM (Battery voltage: 3283mV, Temperature: 25°C, Broadcast count: 30264, Uptime: 0天+20:59:08).
 - CP29-47D8:** RSSI: -63, Tx: -19.5dBm, MAJOR: 0, MINOR: 0, CONN: YES, 0%, 4.47m.
- Eddystone details:** A screen with a blue header and two tabs: "iBeacon" and "Eddystone" (selected). It shows:
 - UID: Namespace ID (e5a4a7e5a48f31323334), Instance ID (44584c29191a), Check distance (-24 >), Advertisement power (7 >).
 - URL: URL (http://www., szdx-smart), Check distance (-24 >), Advertisement power (7 >).
 - TLM: Battery voltage (3311), Temperature (25), ADY count (1037), Time since (0day(s)+00:39:55).
 - Advertisement interval (5 >), Restart eddystone (>), Set restart password (>).

Figure 3: IOS APP interface



6. Attention

- Avoid external force squeezing the product
- Use in room temperature indoor and outdoor environments.
- Do not use in humid or watery environments.
- Non-professionals are not allowed to disassemble and repair by themselves