

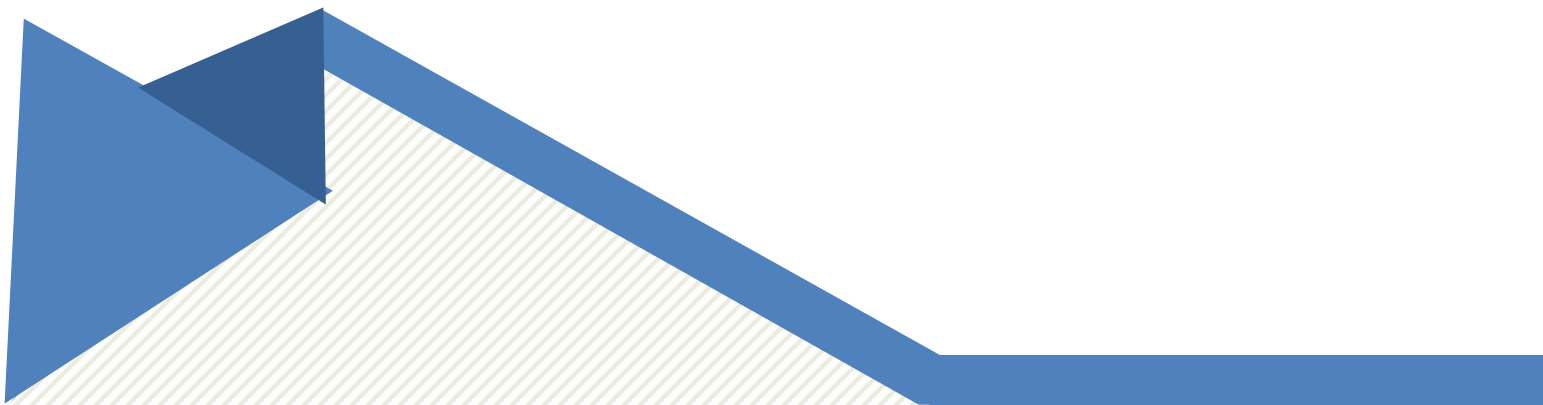


# **DX-CP28**

# **Bluetooth beacon**

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## Update Records

Version	Date	Description	Author
V1.0	2022/01/24	Initial version	LSL
V1.1	2023/05/17	Updated parameters	LSL

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# 1. Introduction

## 1.1. Overview

The DX-CP28 Bluetooth beacon is a low-power Bluetooth product developed by Shenzhen Daxia Longque Technology Co., Ltd., specialized for asset management, indoor positioning, and advertising push. It complies with Bluetooth BLE 5.1 specification and supports both iBeacon and Eddystone protocols. With a circular design and a PC material housing, it is compact and delicate, assembled with a twist-lock mechanism for easy battery replacement, extending battery life. SDK and technical services are provided, and OEM/ODM options are available according to customer requirements.

## 1.2. Product Features

- DIALOG 14531 main control chip
- ARM Cortex-M0 processor
- Bluetooth BLE 5.1 protocol+
- Low power consumption, low cost
- Operating power consumption: 24.87 uA
- Lifespan: 4years
- Powered by a CR2477 lithium button cell battery
- Open-air visible communication distance: 100-120m
- Supports iBeacon & Eddystone
- Supports rotation of 6 UUIDs
- Compact and delicate, easy to install
- Twist-lock assembly, easy battery replacement

### 1.3. Bluetooth default parameters

- Bluetooth name: CP28-XX (XX: The last two bytes of the MAC address)
- **Transmit power: +2.5dBm**
- Broadcast interval: 500ms
- 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 iBeacon password: dx1234
- Default Restore factory password: 1234

**Table 1 : Basic Parameter Table**

Parameter Name	Details	Parameter Name	Details
Chip	DA14531	Model Number	CP28
Bluetooth protocol	BLE 5.1	protocol	GATT, iBeacon, Eddystone
Battery type	CR2477	Broadcast interval	100ms ~ 1000ms
Battery level	880×2 mAh	Transmit power	-19.5~+2.5dBm
Power supply	Button cell battery	Sensitivity	-94dBm@0.1%BER
Modulation method	GFSK	Frequency band	2.402GHz -2.480GHz ISM band
RF input impedance	50Ω	Frequency hopping and channels	1600hops/s 2MHzspacing, 40channels
Antenna interface	On-board antenna	PCB Size	55.6*55.6mm
Operating temperature	MIN:-40℃ - MAX:+85℃	Humidity	10%-95% non-condensing

## 2. Product schematic diagram and exterior dimensions

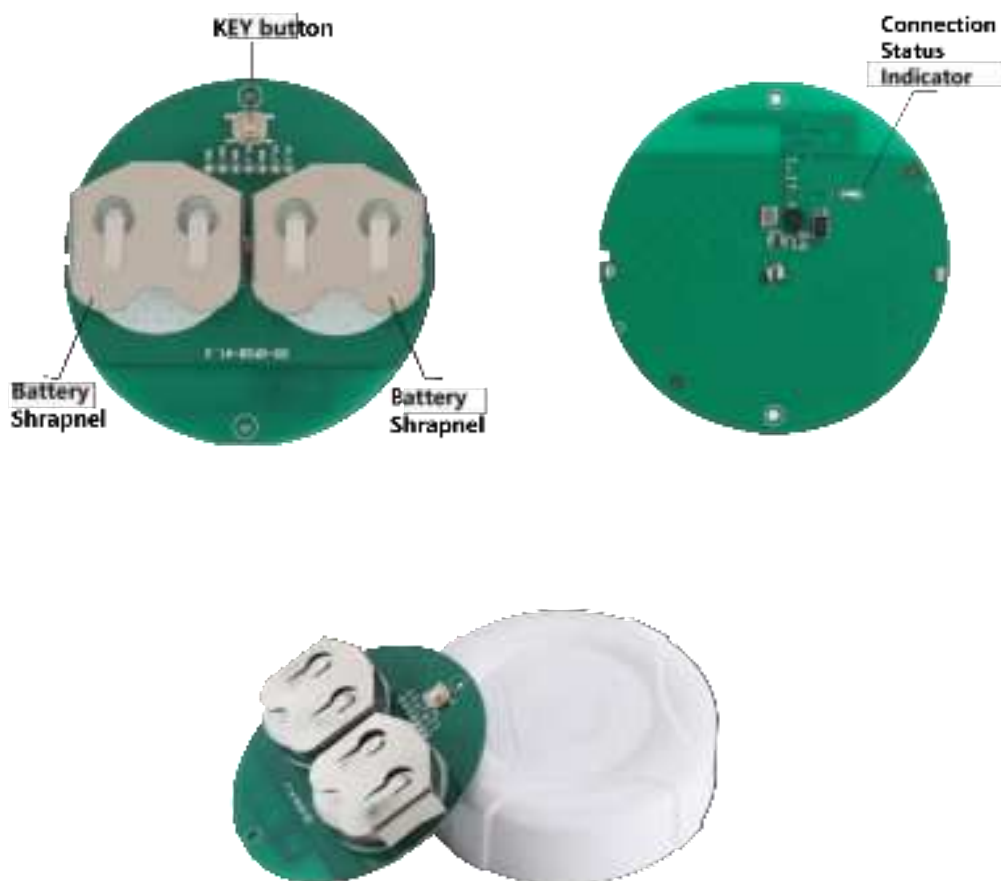


Figure 1: CP28 Product diagram

## 3. Hardware Construction Description

### 3.1. KEY button

Table 2: KEY switch Function Definition Table

Operation Method	Result
Press and hold the KEY switch for at least 6S	Power off
Press and hold the KEY switch for at least 2S	Power on

#### Note:

Default to low power mode after power on/power up

### 3.2. Indicator Light

- Connection status indicator light: The light is off when not connected; the red light is on when connecting
- After the module is powered on/turned on, the connection status indicator light flashes once
- After powered off, the connection status indicator light will stay on for 3s then turn off
- Click the button and the indicator light will flash once
- Trigger the trigger and the indicator light will flash once

## 4. Electrical Characteristics and Reliability

### 4.1. Operating and Storage Temperature

Table 3: Operating and Storage Temperature Table

Parameter	Minimum	Typical	最大值	Unit
Normal Operating Temperature	-40	-	40	°C
Storage Temperature	-50	-	150	°C

### 4.2. Standby Current

Table 4: Power Consumption Table

Mode	Current	Unit
OFF	1.64	uA
ON	24.87	uA

#### Note

The power consumption in the above table is obtained under the condition of transmission power +2.5 dBm, with a broadcast interval of 500ms, for reference only. The power consumption generated by this module may vary with different transmission powers and broadcast intervals. Actual power consumption shall prevail.

### 4.3. RF Characteristics

**Table 5: RF Characteristics Table**

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

### 4.4. Distance Measurement Table

Test Object	Connection Object	Connection Distance	Broadcast Distance
CP28	iPad	67.2 m	122.2m
	Onepuls ACE 2 Pro	67.2 m	146.2m

#### Note

Test default parameters: (Transmit power: +2.5dBm, Broadcast interval: 500ms)

## 4.5. ESD Protection

In the application of modules, static electricity generated by human static electricity and electrostatic friction between microelectronics may discharge to the module through various paths, which may cause certain damage to the module. Therefore, ESD protection should be emphasized. In the process of research and development, production assembly, testing, etc., especially in product design, ESD protection measures should be taken. For example, anti-static protection should be added at the interface of circuit design and points susceptible to electrostatic discharge damage or interference. Anti-static gloves should be worn during production

**Table 6: ESD Tolerance Voltage Table for Module Pins**

Testing Interfaces	Contact Discharge	Air Discharge	Unit
VBAT and GND	+2	+4	kV
Main Antenna Interface	+2	+4	kV

# 5. App Usage Process

## 5.1. Android APP Modify Module Parameters

### 5.1.1. Android App Operation Process

1. Download “**DX-SMART.apk**” from the official website or contact customer service to install it on your Android phone.
2. Open the **DX-SMART** APP and click **iBeacon** to enter the connection interface.
3. Find the MAC code that is the same as the shell and click Connect.
4. After connection, you can modify the iBeacon parameters in the APP
5. After making the modifications within the specified format and range, click on “**Restart iBeacon**” Enter the restart password to complete the modifications.  
(Android app interface as shown in Figure 2)"

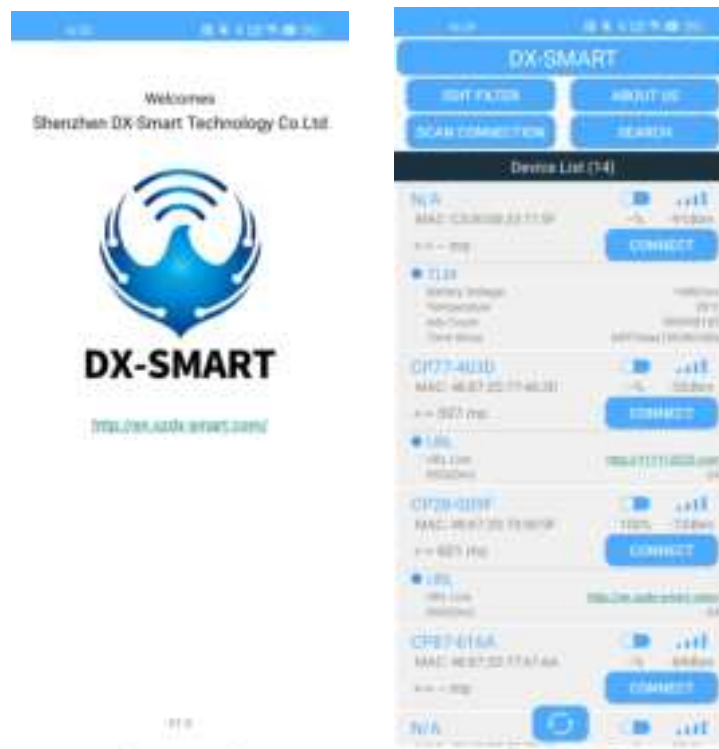




Figure 2: Android APP interface diagram

### 5.1.2. iOS App Operation Process

1. Download our “**DX-SMART**” app from the Apple App Store
2. Open the **DX-SMART** APP and click **iBeacon** to enter the connection interface.
3. Find the MAC code that is the same as the shell and click Connect.
4. After connecting, you can modify both iBeacon and Eddystone parameters.
5. After making modifications within the specified format and range, click on “**Restart iBeacon**” Enter the restart password to complete the modifications.  
(IOS app interface as shown in Figure 3)



Figure 3: IOS APP interface diagram

## 6. Points for attention

- Avoid external pressure on the product
- Indoor and outdoor use in normal temperature environments, prohibited from use in damp or watery environments
- Non professionals are not allowed to disassemble and repair themselves

## 7. FCC Caution

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception,

which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

The device has been evaluated to meet general RF exposure requirement. The device can be used in portable exposure condition without restriction.