



# DX-CP34

## Bluetooth Host User manual

Version: 2.0

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## Updated records

Version	Date	Instructions	Author
V1.0	2025/03/20	Initial version	SML
V1.1	2025/08/07	Updating parameters	SML
V2.0	2023/08/20	Optimized air rate rating	SML

## Contact Us

**SHEN ZHEN DX-SMART TECHNOLOGY CO.,LTD,**

Email: [manager@szdx-smart.com](mailto:manager@szdx-smart.com)

Tel: 0755-2997 8125

Whatsapp: +86 15798463070

Website: [en.szdx-smart.com](http://en.szdx-smart.com)

Address: 601, A1 Block, Huafengzhigu, Hang Kong Road, Hang Cheng Street, Baoan District, Shenzhen

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# 1. preface

## 1.1. Overview

CP34 is an integrated bluetooth (BLE) and low power consumption LoRaWAN communication function of the terminal equipment, mainly used for scanning, collect around BLE devices (iBeacon, Eddystone UID and ordinary BLE radio equipment) of the information, and uploaded to the cloud in LoRaWAN network server. LoRaWAN agreement on equipment, which can access to the existing LoRaWAN network, without relying on operator network, only the power supply and gateways can be deployed within 3 km. Lower the difficulty of the whole monitoring and gathering network deployment.



## 2. Product features

- A variety of radio support: support BLE scanning iBeacon, Eddystone UID and custom broadcast data upload
- The diversification of parameters configuration mode: you can use a serial port is configured, can also use a mobile phone APP is configured
- Simple: join network support LoRaWAN agreement to join any existing LoRaWAN network
- Data processing: automatic packing BLE equipment data collected, conform to the particular protocol format
- Net simple: LoRaWAN use OTAA mode, only need to configure the triple data can be automatically into the net  
(using the default configuration does not need to configure the direct access)
- Low deployment requirements: use LoRaWAN agreement make equipment can only need power supply, and do not need to provide network can be deployed
- Working voltage: CP34:3.3 V to 5.5 V (typical values: 5 V)
- Support multiple frequency plan: CN470~510、EU863~870、US902~928
- Distance: open visual range to 3 km (for reference only and shall be subject to the actual distance to the measured)
- Maintenance is simple: support the OTA upgrade for remote maintenance



## 3. Product schematic diagram

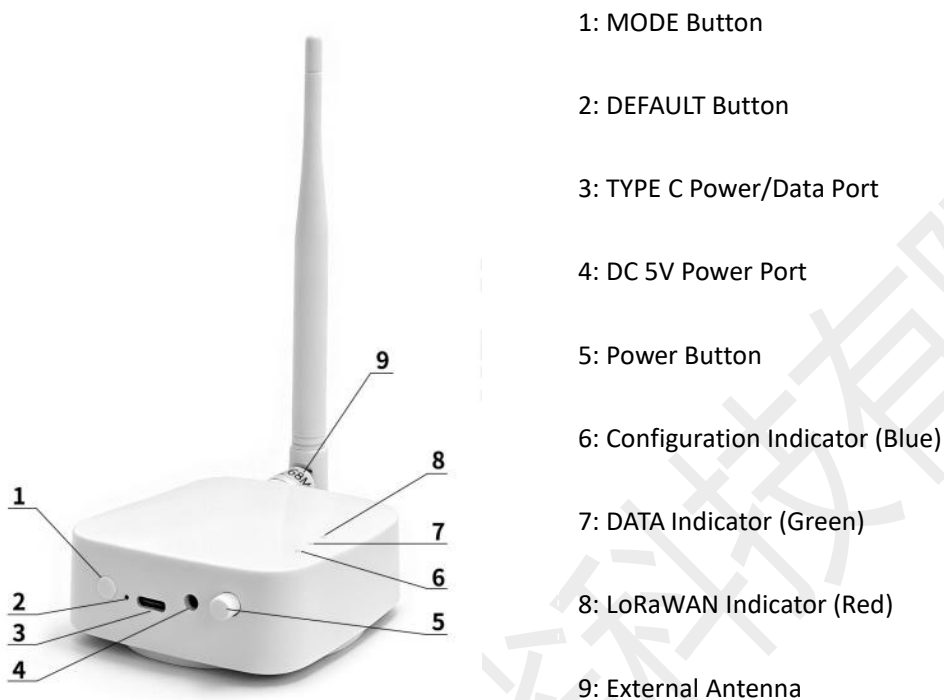


Figure 1: CP34 product schematic diagram (,,)

## 4. The hardware structure that

Table 1: Description of working status

Working state	Instructions
Boot self-inspection	After the device is powered on or restored to factory Settings, the system self-test will be performed
Waiting to connect to the network	After the self-test is completed, the device goes into the waiting state and tries to connect to the network
The net success	When the equipment after successful access networks, into the normal working condition
Configuration Mode	Mobile phone APP can be connected through the BLE and

configure CP34 parameters

Upload data model      BLE devices around automatic scanning, and upload data collected to the gateway

**note**

1. Enter a state of boot self-checking, CP34 automatically enter configuration mode, can be connected through the APP search equipment at this time
2. After successful network access, if CP34 is not in BLE connection state, it will automatically switch to data upload mode.  
If it is in BLE connection state, after disconnecting BLE connection, you need to manually switch to data upload MODE by pressing Mode
3. Description of configuration mode:
  - a. Default Bluetooth name: CP34-xx xx xx, where xx is the last three bits of Bluetooth MAC address
  - B. modules BEL UUID: SERVICE UUID: 6 e400001 b5a3 - f393 e0a9 -- e50e24dcca9e  
NOTIFY/WRITE UUID: 6e400003-b5a3-f393-e0a9-e50e24dcca9e  
WRITE UUID : 6e400002-b5a3-f393-e0a9-e50e24dcca9e
  - c. The UUID of the mobile APP needs to be consistent with the module, otherwise CP34 cannot be normally connected and configured
4. Upload data schema specification:
  - a. Scanning mechanism: the maximum scanning distance in open environment is about 100 meters (the actual distance is affected by the environment and the transmission power of BLE equipment);  
When the same equipment radio multiple frames, CP34 in a scan cycle only random one broadcast frame data
  - b. Upload mechanism: adopts cyclical upload method, a single data upload up to 20 data; Data upload cycle is 13 ~ 30 seconds

**Table 2: buttons**

Functions	Operation	Features
MODE button	Long press for more than 3s	Configure mode/data Upload mode switch
The DEFAULT button	According to the above 6 s	factory data reset
Power button	Press	Switch machine



**note**

1. MODE button in CP34 is success, and not in a BLE to use connection condition

**Table 3: light**

Lamp foot name	color	Features	Status
Configure indicator light	blue	Show the current mode	Configuration mode (BLE not connected) : rapid flashing Configuration Mode (BLE connected) : Constant light Data Upload Mode: Slow blink
LoRaWAN indicator light	red	Show the current network status	Wait to connect to the network: Blink Net success: constant light
DATA indicator light	green	Display the current data upload status	Are data upload: flashing To upload: go out

**note**

1. When the module performs self-test, the three-color light will flash rapidly synchronously

**Table 4: power supply port**

Power supply mouth	Function
Type-c	Power supply or the AT commands to debug
DC power supply mouth	Only used for the power supply

**Table 5: antenna**

Antenna mouth	function
Threaded antenna port	Lora antenna mouth

**Notes**

1. Please put the antenna installed before electricity, charged it might damage the lora receiving operation, affect the communication distance





## 5. Product specification

Table 6: Product specification parameter table

Specifications	
Dimensions	76*76*34mm
Net weight	95g
Color	white
Shell material	ABS
BLE	
BLE protocol	5.1
LoRa module	
ASR	6601
Sensitivity	-148dbm@292bps(RX), 5 to 20dbm (TX)
wireless	
Frequency	LoRaWAN CN470/EU868/US915 etc
Working mode	CLASS A
Activation method	OTAA
Communication distance	3 km, visual range (city)
Power supply	
Voltage	3.3V-5V
Maximum current	30mA
Environment	
Temperature of operation	- 20 °C ~ 70 °C
Storage temperature	- 40 °C ~ 85 °C
Protection level	IP65



## 6. LoRaWAN frequency bands and countries

Table 7: LoRaWAN spectrum parameter table

Country/region	Frequency bands
European or other	EU868
China	CN470
Australia	
New Zealand	
Brunei	
Cambodia	
Hong Kong	
Indonesia	
Japan	AU915,AS923
Laos	
Singapore	
Taiwan	
Thailand	
Vietnam	
United States	US915
South Korea	KR920



## 7. Net protocol parameters and data formats

### 7.1. Network access mode

- Network access mode: OTAA
- OTAA net parameters:
  - DEVEUI: 70 B3 D5 7 e D0 + bluetooth MAC address after three
  - APPEUI: 70 B3 D5 7 e D0 + bluetooth MAC address after three
  - APPKEY: 52 72 06 1C 29 82 4B 2A 46 13 82 D3 D5 C4 3F 4D

### 7.2. Data Protocol Format

#### 7.2.1. Bluetooth scan upload format parsing

Report example results: 0xAA, 0x01, 0x01, 0x9D, 0x6F, 0x42, 0x02, 0x00, 0x00, 0x00, 0x00, 0xC7, 0xDE, 0x01, 0xBB

1. The frame head: 0 xaa said packet began
2. 0 x01: it means the protocol version
3. Number of devices: 1 byte (0x01), which means 1 device is included in the packet
4. Address code: 3 bytes (0x9D, 0x6F, 0x42), the last 3 bytes of the MAC address of the device
5. Data type: 1 byte (0 x01 = BLE, 0 x02 = iBeacon, 0 x03 = Eddystone UID)
6. Effective data (fixed length) :
  - iBeacon: Major(2Byte) + Minor(2Byte) + TxPower(1Byte) + RSSI(1Byte)
  - Eddystone UID: Instance(6Byte) + TxPower(1Byte) + Reserved(1Byte) + RSSI(1Byte)

- Custom BLE devices: data length (1 Byte) + data content (N Byte) + RSSI (1 Byte))
7. **Check digit**: checksum (1 byte), used for data integrity check (calibration calculation starting frame head, close to the front of the check digit a byte)
  8. **Tail frame**, a fixed value 0 XBB, used to package complete confirmation

## 8. DFU upgrade

DFU upgrade is supported, and firmware version can be updated through mobile APP (NRF CONNECT). The following is the process of updating firmware version.

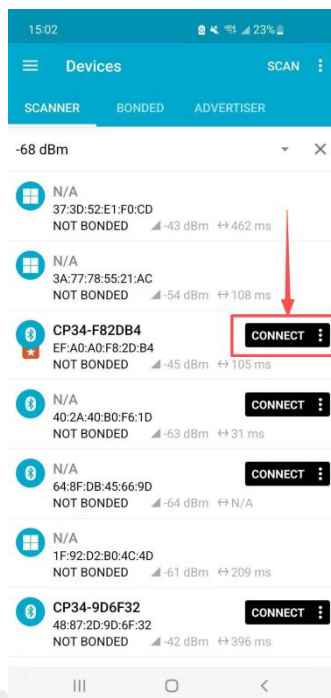


Figure 2: choose need DFU devices and connections

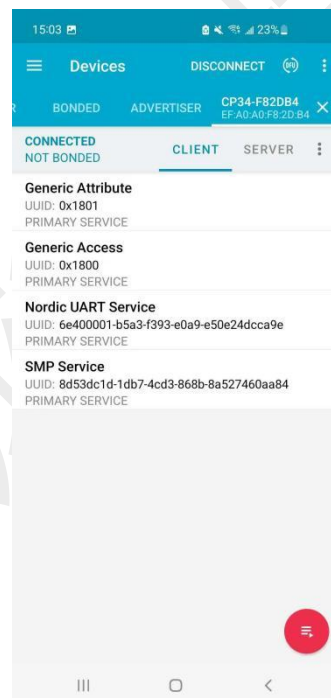


Figure 3: need DFU device is connected

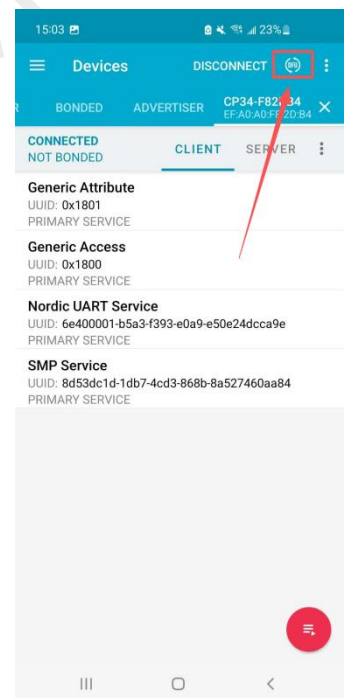
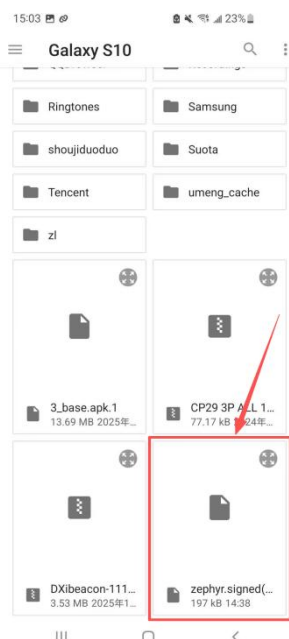
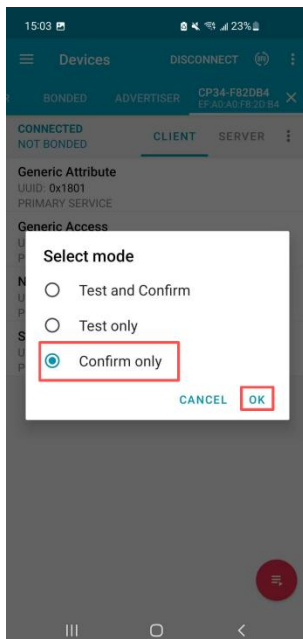


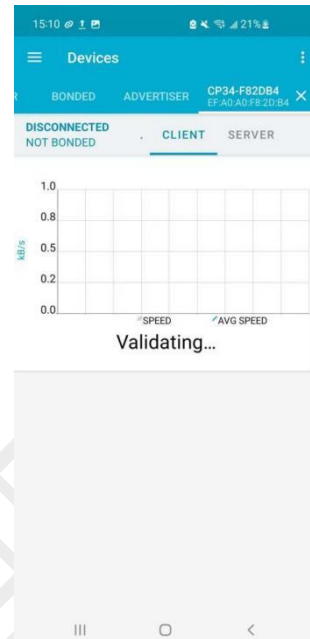
Figure 4: Click on the DFU in the top right corner



**Figure 5: Select the software that requires DFU**



**Figure 6: select Confirm Only after click OK**



**Figure 7: equipment to upgrade, waiting for complete**

## 9. Hardware parameters

### 9.1. Flow consumption

**Table 8: power consumption table**

model	current	Units
Upload data model	29.41	mA
Configuration mode (BLE connected)	14.23	mA

Configuration Mode (BLE not connected)	14.28	mA
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## 9.2. Electrostatic protection

In product applications, such as charged the friction between the human body static electricity, microelectronics produced electrostatic, discharge through various means, the product may cause certain damage to the product, so the ESD protection should be taken seriously. In use process, ESD protection measures should be taken.

**Table 9: Product ESD withstand voltage table**

Contact discharge	Air discharge	unit
Plus or minus 4	Plus or minus 8	kV

# 10. What to Watch for

- Avoid squeezing the product with external forces
- Use in indoor and outdoor room temperature environment, do not use in humid and water environment
- Non-professionals do not disassemble and repair by themselves