



POE-enabled network card reader base station WE-RWN300

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I. Overview

The WE-RWN300 network card reader base station supports POE or DC power supply and connects to networks via WiFi or POE Ethernet, enabling rapid deployment of positioning base stations wherever WiFi signals are available. The reader can detect tags up to 100 meters away, not only reading the electronic tag IDs but also calculating the actual tag distance by measuring its wireless signal strength. When multiple base stations (readers) operate together, they can pinpoint the exact locations of electronic tags within their effective range, enabling real-time monitoring of personnel and items for efficient tracking and retrieval.

The WE-RWN300 network card reader supports two card reading antennas, with the two interfaces serving as mutual backups; by default, one interface is connected to the antenna. For omnidirectional reading, both antennas can be connected—one facing left and the other facing right—to achieve a wider reading angle and more precise positioning. Tag positioning finds extensive applications in various fields such as smart warehouse management, logistics tracking, indoor navigation, and personnel management.

II. Main Characteristics

- ◆ It can simultaneously detect up to 1,000 electronic tags, with an antenna detection range of up to 100 meters in open areas.
- ◆ The communication range with WiFi hotspots (50mW) is no less than 80 meters, and network setup is simple.
- ◆ It measures the wireless signal strength of the electronic tag and calculates the actual distance of the tag.
- ◆ You can call the tag for audio and visual alerts (available only for audio-visual tags)
- ◆ Supports connection of up to 4 card-read antennas, offering wider reading angles and more precise positioning.
- ◆ The card reading antenna can be extended up to 30 meters (115,200 bps), ensuring easy installation and deployment.
- ◆ It provides an open protocol, enabling third-party systems to communicate with the card reader seamlessly over the network.
- ◆ Provide an SDK development kit to enable users to develop their own tag positioning management systems.
- ◆ Powered by POE or a wide voltage range of 10–26 V; each reader consumes no more than 800 mA (at 12 V).

III. Technical Parameters

project	specifications
pilot lamp	[BT]: Bluetooth status indicator light Chang Liang: Bluetooth connection is normal Always Off: Bluetooth connection is disconnected
	[RUN]: System operation indicator light Chang Liang (intermittent flash): Online normally Frequent extinction (occasional flash): Online anomaly
	[WiFi]WiFi wireless status indicator light
	Chang Liang: The connection to the WiFi hotspot is normal.
	Constant error: Abnormal connection to the WiFi hotspot.
	[Mode], Mode indicator light Chang Liang: WIFI mode. Always Off: Ethernet mode.
	[ANT]: The 0 indicator light on the card reader antenna flashes once per tag read.
Ethernet interface	10M/100M Adaptive
	POE supply electricity
	Supports DHCP and UDP protocols
	Provide an SDK development kit to support integration with third-party systems
WiFi wireless	Wireless protocol: 802.11 b/g/n
	Transmit power: 100 mW
	Working frequency: 2.4–2.4835 GHz
	Provide an open application communication protocol to support integration with third-party systems
Card reading antenna	Communication Interface: RS232 Serial Port
	baud rate: 115200,57600,38400,19200,9600 bps
	Interface specifications: 4P terminal head (5V, GND, TXD, RXD)
USB parameter setting	USB-II interface, CH340 driver for virtual serial port, and Windows configuration software.
Bluetooth Parameter Settings	Supports BLE 4.2 specification Communication range: 30 meters (depending on the environment)
working temperature	-40°C~85°C
Working humidity	Humidity below 95% (no condensation)
way to install	Ceiling mounting / Wall mounting (wall-mounted, bracket mounting, clamp mounting, guide rail mounting)
power suppl	POE, 12V (1A), supports wide voltage supply range of DC12V–DC26V
size	Length: 121 mm × Width: 78 mm × Height: 51.4 mm
waterproof and dustproof	IP67
weight	530g

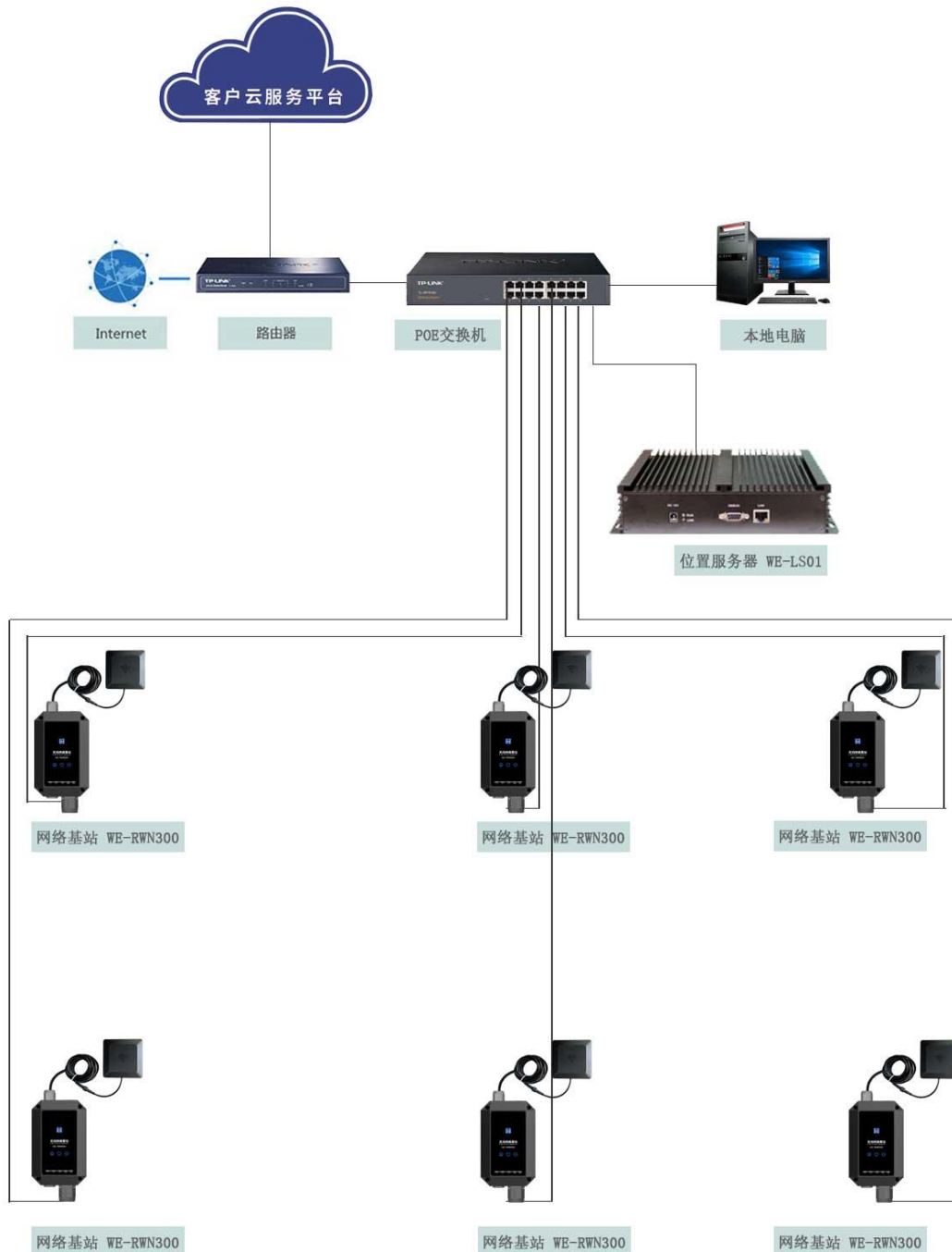
IV. Product Appearance



Interface	name	specifications	explain
WiFi antenna	WiFi	SMA external thread, internal hole	Connect the 2.4G WiFi antenna
Card reading antenna (ANT0/4)	G	Power source (output)	3.5mm terminal block for connecting the WE-TX20 card reader antenna.
	R	RS232 data reception	
	T	RS232 data transmission	
	V	Power supply: 5V (output)	
pilot lamp	BT	Bluetooth status indicator light	Chang Liang: Bluetooth connection is normal Always Off: Bluetooth connection is disconnected
	RUN	Device Operation Indicator Light	Chang Liang (intermittent flash): Online normally Frequent extinction (occasional flash): Online anomaly
	WIFI	WIFI connection indicator light	When the card reader connects to the Wi-Fi network, the light turns on.
	Mode	Mode indicator light	WIFI/Ethernet mode indicator
	ANT0	Card reading antenna 0 indicator light	The card reader antenna flashes each time it reads the tag.
POE Interface	POE	Standard 48V POE interface	Built-in voltage regulator, converts 48V to 12V
	LAN	10/100M Adaptive	Report tag data via the network interface
Power interface DC12V	+	Positive power terminal (12V)	3.5mm terminal block, voltage range 10V–26V (12V recommended)
	-	Power supply location	

V. Network Configuration Description

The WE-RWN300 tag reader transmits the read tag information to the location server, which performs comprehensive calculations on the data to determine the tag's precise location.



The WE-RWN300 network card reader supports two card reading antennas, with the two interfaces serving as mutual backups. By default, one interface connects to the card reading antenna. For omnidirectional reading scenarios, both antennas can be connected—one facing left and the other facing right—to achieve comprehensive card reading and more precise positioning.

VI. Parameter Settings

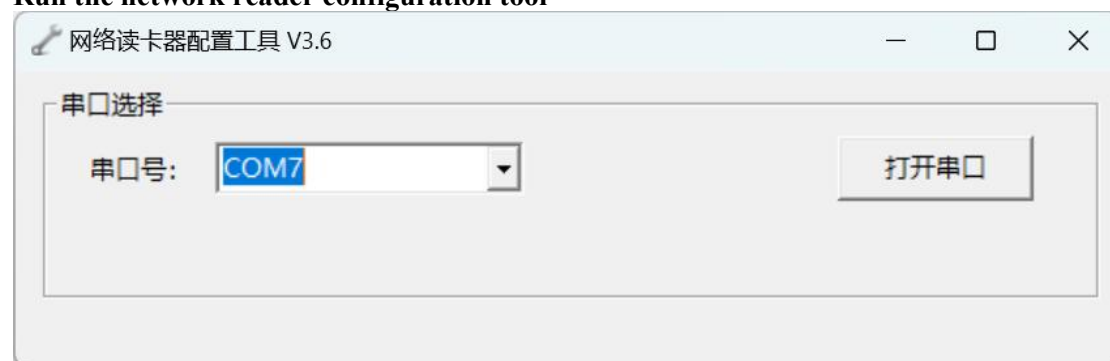
1. Connect the USB interface "SET" to the computer

Check the serial port number of the network-connected card reader on your computer. Open Device Manager, locate the "USB-Serial CH340" device under the "Ports" category, and note its COM number.



If the computer cannot recognize this USB serial device, you need to install the corresponding driver.

Run the network reader configuration tool



After selecting the corresponding serial port number and clicking the "Open Serial Port" button, the configuration software will display the firmware version and current parameters of the network card reader. The device offers both wired and WiFi configurations; users can modify the device parameters and then click "Apply".

网络读卡器配置工具 V3.6

串口选择

串口号:
COM7

版本:
V1.03.250208

关闭串口

网络参数配置

WIFI名称:

WIFI密码:

MAC地址:
70-19-88-D3-7D-74

IP 地址:
192 . 168 . 30 . 195

子网掩码:
255 . 255 . 255 . 0

默认网关:
192 . 168 . 30 . 254

使用有线网

使用WIFI

启用DHCP

读卡天线配置

波特率:
115200 (默认)

网络连接配置

连接模式:
等待平台连接 (默认)

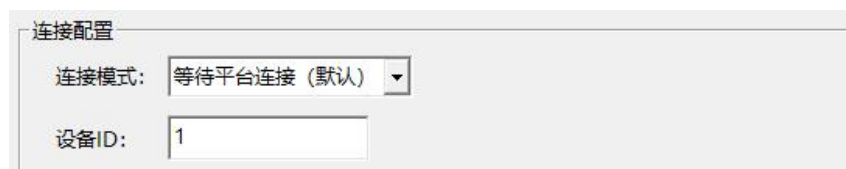
设备ID:
1

应用



[Connection Mode] The default mode is "Wait for Platform Connection." This mode communicates with the location server, and the device ID is set to 1 by default (typically requires no modification). The device then waits for the location server management system software to establish a connection.

When a platform connects multiple devices, the "Device ID" can be used to distinguish between different devices. Alternatively, you can identify devices solely by their IP addresses without modifying the Device ID.



[Connection Mode] Change to "Active Connection Platform". In this mode, you need to configure the "Platform IP Address requiring login", "Platform port number", "Device name",

and "Device password". In this mode, the card reader can be deployed within a local area network, actively connects to the cloud server, and sends card reading data.

连接配置

连接模式:	主动连接平台		
设备名称:	dev001	设备密码:	*****
平台 IP:	192 . 168 . 1 . 196	平台端口:	8800

2. Bluetooth connection for WeChat Mini Program configuration

Turn on Bluetooth on your phone in advance, then search for "Shidian Location Assistant" in the WeChat Mini Program.



After entering the mini-program, click "Search," locate the Bluetooth name displayed on the device's side (find-*****), and tap to access it.



On the Bluetooth configuration homepage, select the device's network mode—WiFi or Ethernet. You can also modify the Bluetooth display name.

5:56



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设备信息

WIFI

以太网

find-2500051

设备类型

7

主版本

1

子版本

3

版本描述

当前网络模式

☐ WIFI

☒ 以太网

设置蓝牙参数

蓝牙名称

find-2500051

查询

应用

复位设备

2.1 WiFi Mode Settings

In this mode, users need to enter their WiFi credentials and the device's IP address (enabling DHCP allows automatic IP address assignment from the router). Then, assign the

obtained IP address to the device. Check the "WiFi" indicator on the panel—if it is lit, the device is connected to the WiFi network.

The screenshot shows a web-based configuration interface for a network device. At the top, there are three tabs: "设备信息" (Device Information), "WIFI" (selected), and "以太网" (Ethernet). Below the tabs, the "网络参数配置" (Network Parameter Configuration) section is visible. It contains two main groups of settings. The first group, "WiFi接入账号" (WiFi Access Account), includes "WIFI名称" (WIFI Name) set to "FengBao_TP" and "WIFI密码" (WIFI Password) set to "Fengbao". The second group, "获取动态IP" (Obtain Dynamic IP), includes "IP地址" (IP Address) set to "192.168.30.62", "子网掩码" (Subnet Mask) set to "255.255.255.0", and "默认网关" (Default Gateway) set to "192.168.30.254". There is a checkbox for "启用DHCP" (Enable DHCP) which is currently unchecked. Below this, the "读卡天线配置" (Card Reader Antenna Configuration) section is visible, showing "波特率" (Baud Rate) set to "115200".

[Connection Mode]The default mode is "Wait for Platform Connection." This mode communicates with the location server, and the device ID is set to 1 by default (typically requires no modification). The device then waits for the location server management system software to establish a connection.

When a platform connects multiple devices, the "Device ID" can be used to distinguish between different devices. Alternatively, you can identify devices solely by their IP addresses without modifying the Device ID.

The screenshot shows a web-based configuration interface for a network device. The "网络连接配置" (Network Connection Configuration) section is visible. It contains two main settings: "连接模式" (Connection Mode) set to "等待平台连接" (Wait for Platform Connection) and "设备ID" (Device ID) set to "1".

[Connection Mode]You can also select "Active Connection Platform." In this mode, you need to configure the "Platform IP address requiring login," "Platform port number," "Device name," and "Device password." Under this mode, the card reader can be deployed within a

local area network, actively connects to cloud servers or third-party servers, and sends card reading data.

网络连接配置

连接模式	主动连接平台
设备名称	dev001
设备密码	888888
平台IP	192.168.30.78
平台端口	8800

查询

应用

复位设备

After selecting the connection mode, click the "Apply" button at the bottom of the page to save the information. Wait 5 seconds until the reset device button changes from gray to blue, then click "Reset Device" to restart the device. After successful restart, click "Query" to verify that the modified information is correct.

2.2 Ethernet Mode

In this mode, users must enter the device's IP address (enabling DHCP allows automatic IP address assignment from the router), then assign the obtained IP address to the device (Note: Subnet mask and default gateway are mandatory). Check the "demo" indicator on the panel; if it is lit, the device is connected to the Ethernet network.

6:05

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设备信息 WIFI 以太网

网络配置

IP地址 192.168.1.195 ☐ 启用 DHCP

子网掩码 255.255.255.0

默认网关 192.168.1.1

读卡天线配置

波特率 115200

[Connection Mode]The default mode is "Wait for Platform Connection." This mode communicates with the location server, and the device ID is set to 1 by default (typically requires no modification). The device then waits for the location server management system software to establish a connection.

When a platform connects multiple devices, the "Device ID" can be used to distinguish between different devices. Alternatively, you can identify devices solely by their IP addresses without modifying the Device ID.

网络连接配置

连接模式

等待平台连接

设备ID

1

[Connection Mode] You can also select "Active Connection Platform." In this mode, you need to configure the "Platform IP address requiring login," "Platform port number," "Device name," and "Device password." Under this mode, the card reader can be deployed within a local area network, actively connects to the cloud server, and sends card reading data.

网络连接配置

连接模式

主动连接平台

设备名称

dev001

设备密码

888888

平台IP

192.168.30.78

平台端口

8800

查询

应用

复位设备

After selecting the connection mode, click the "Apply" button at the bottom of the page to save the information. Wait 5 seconds until the reset device button changes from gray to blue, then click "Reset Device" to restart the device. After successful restart, click "Query" to verify that the modified information is correct.

VII. Reader Testing

1. The network connection is working properly.

Using the configured IP address, open the command prompt on your computer and run the ping command to verify whether the card reader device is accessible over the network.

```

管理员: 命令提示符
Microsoft Windows [版本 10.0.16299.125]
(c) 2017 Microsoft Corporation. 保留所有权利。

C:\Users\Administrator>ping 192.168.1.203

正在 Ping 192.168.1.203 具有 32 字节的数据:
来自 192.168.1.203 的回复: 字节=32 时间=119ms TTL=128
来自 192.168.1.203 的回复: 字节=32 时间=94ms TTL=128
来自 192.168.1.203 的回复: 字节=32 时间=131ms TTL=128
来自 192.168.1.203 的回复: 字节=32 时间=29ms TTL=128

192.168.1.203 的 Ping 统计信息:
    数据包: 已发送 = 4, 已接收 = 4, 丢失 = 0 (0% 丢失),
    往返行程的估计时间(以毫秒为单位):
        最短 = 29ms, 最长 = 131ms, 平均 = 93ms

C:\Users\Administrator>
  
```

Run the Network Card Reader Test Tool, enter the IP address of the network card reader, and click Start:



The screenshot shows the 'Network Card Reader Test Software V1.9' window. On the left, there are several configuration panels: 'Mode Configuration' with a 'Connect to' field set to '192.168.30.195' and a 'Stop' button; 'Sound and Light Alert' with fields for 'Station' and 'ID', a 'Start' button, and checkboxes for 'Green Light', 'Red Light', and 'Buzzer'; 'Short Message Notification' with fields for 'Station', 'ID', 'Short Message Number', and 'Short Message Content', and a 'Send' button; and a 'Status' panel showing 'Device Status' as 'Connected', 'Total Tags' as 296, and 'Disconnected Tags' as 0, with a 'Details' button. On the right, there is a table displaying detected tags. At the bottom, there are 'Previous Page' and 'Next Page' buttons.

序号	分站号	卡号	欠压	附加数据	dB / cm	活跃次数
1	0	1752902	正常	80 01 04 3c	-64 / 2290	3
2	0	1752907	正常	90 01 04 4d	-60 / 1584	3
3	0	1901455	欠压	00	-86 / 17378	1
4	0	1901463	欠压	10	-85 / 15848	2
5	0	1903862	正常	60	-84 / 14454	1
6	0	1903878	正常	70	-73 / 5248	2
7	0	1903901	正常	40	-74 / 5754	2
8	0	1903904	正常	70	-67 / 3019	2
9	0	1903905	正常	70	-68 / 3311	3
10	0	1903906	正常	60	-81 / 10964	2
11	0	1903907	正常	50	-71 / 4365	2
12	0	1903908	正常	30	-70 / 3981	3

Check the "Device Status" to see if it is "Connected". You can view the "Total Number of Tags Read" and the "Number of Disconnected Tags." Disconnected tags are those that were previously read but are now unavailable. The detailed information of detected tags is displayed in a list.

The specific information of the detected tags is displayed in the list.

1、Card number: ID of the detected tag

- 2、 Substation: Which base station substation detected it? The WE-RWN0300 card reader base station automatically identifies itself as Substation 0.
- 3、 Under-voltage condition: Green indicates normal operation; red indicates under-voltage (this label will expire soon). The time from under-voltage to actual failure is no less than one month.
- 4、 Additional data: The reported tag can carry up to 7 bytes of custom data.
- 5、 Distance: The distance between the tag and the sub-station (antenna).
- 6、 Online time: Duration of the detected tag.

Audio-visual alert:

For test tags equipped with audio-visual alert electronic tags, enter the substation number and tag ID to activate the alert.

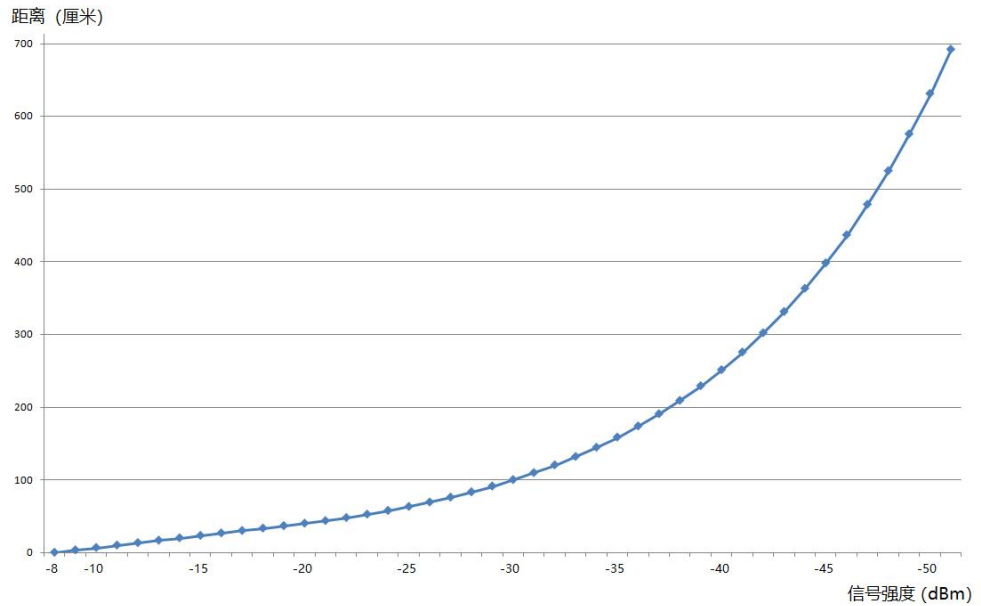


We provide the C++ source code for the "Network Card Reader Testing Software," enabling customers to reference it for developing their own applications.

To further facilitate users' rapid development, we provide an SDK development kit and demonstration program in C#. This enables users to integrate card reading functionality into their software more conveniently and efficiently.

VIII. Distance Measurement Formula

This product calculates the distance between the electronic tag and the antenna by measuring the wireless signal strength of the tag. There is an exponential relationship between the distance and the wireless signal strength, as shown below:



Due to chart size limitations, only the correspondence within 7 meters is displayed.

In the figure above, three values require repeated measurement and calibration.

- 1、 L0: Signal strength when the tag is 0 cm away from the reader, measured at-8 dBm.
- 2、 L1: Signal strength when the tag is 40 cm away from the reader, measured at-20 dBm.
- 3、 L2: Signal strength when the tag is 100 cm away from the reader, measured at-30 dBm.

Based on these three values, the derived formula is as follows:

- 1、 信号强度大于等于L0， 距离直接判定为0厘米。
- 2、 信号强度大于等于L1， 距离可以根据线性运算。

$$\text{距离} = \left[\frac{(L0 - \text{信号强度})}{(L0 - L1)} \right] * 40$$
- 3、 信号强度小于L1， 距离可以根据指数曲线运算。

$$\text{距离} = \frac{10^{[(L2 - \text{信号强度}) / 25]}}{10} * 100$$

For the specific algorithm implementation, please refer to the source code of our DEMO software.

IX. Data Communication Protocol

9.1 Overview of the Agreement

The card reader is responsible for receiving messages from nearby electronic tags and promptly transmitting them to the user application software (the client's proprietary platform

software). Upon receiving the tag information reported by each card reader, the application software calculates the tags' actual positions based on their distances from the antennas, enabling various location-based applications.

The network card reader supports two modes: one is waiting to connect (server mode), and the other is actively initiating a connection (client mode).

In the server-side mode, after the user application software logs in on the network card reader device, the reader actively reports the received tag information to the application software. During this process, the reader must periodically send heartbeat requests to the application software to maintain the connection. Specifically, the application software first sends a "login request" to the reader, which responds with a "login response" for confirmation. The "login request" message contains a heartbeat interval; upon expiration, the reader sends a "heartbeat request" message, and the application software returns a "heartbeat response" message, establishing a bidirectional communication mechanism to sustain the connection. If the reader fails to receive a response from the application software within three heartbeat intervals, the connection is deemed invalid, and the reporting of tag information ceases.

In client mode, the network card reader proactively initiates a connection to the user application software. Considering the usage scenarios and data security requirements of this mode, an encrypted authentication method is employed. Specifically, the network card reader sends a "Login Platform Request" message using the "Device Name" parameter; the application software responds with a "Login Platform Response" message containing a random number. The network card reader then uses this random number to encrypt the password using the MD5 algorithm into ciphertext and sends a "Password Verification Request" message. If the application software successfully verifies the password, it sends a "Password Verification Response" message to authorize login; otherwise, it denies the login attempt. The "Password Verification Response" message includes a heartbeat interval; the heartbeat mechanism for maintaining the connection is identical to that in the server mode and will not be reiterated here.

9.2 Agreement Description

1 Network Protocol

The UDP protocol within the TCP/IP suite is adopted as the foundational protocol for service delivery.

The UDP protocol server port number is provisionally set to 4099.

2 Network Transmission Order

For two-byte, four-byte, or multi-byte content, send the high byte first, then the low byte.

When sending a byte of data, transmit the high-order bits first, followed by the low-order bits.

3 Message Format

IU	Length (byte)	remarks
Protocol Authentication Language	4	0x44535246 (ASCII "DSRF")
Protocol Version Number	1	Current version "4"
message ID	1	
CRC 16-bit check	2	16-bit CRC checksum (including content length)
Message length	2	
Message content	N	

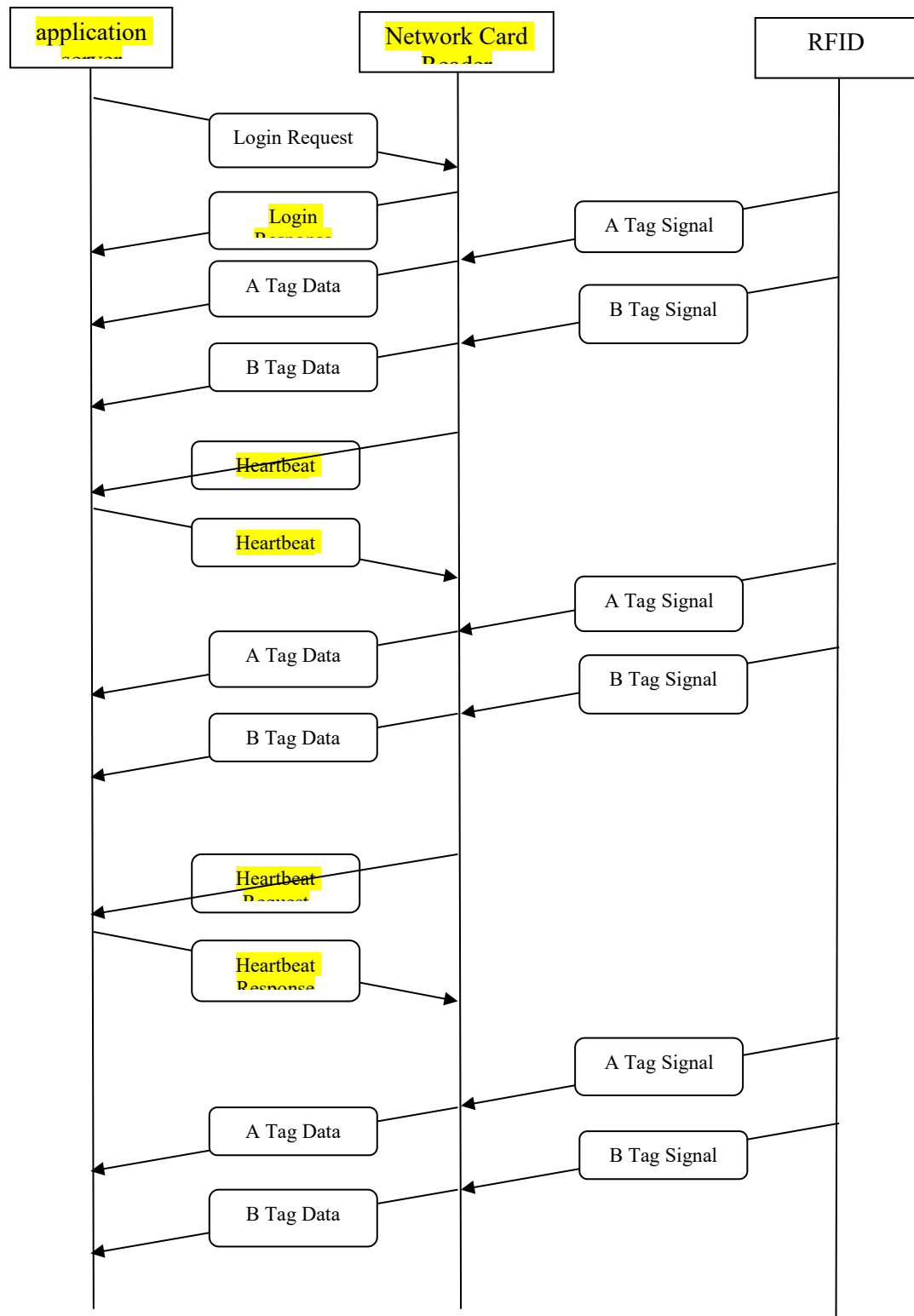
4 Message ID Definition

Message Name	Card Mode	Reader	Data flow direction	price
Login Request	server		Application software (card reader)	1
Login Confirmation	server		Card Reader (Application Software)	2
Send electronic tag information	server		Card Reader (Application Software)	3
Call Tag Request	server		Application software (card reader)	6
Call Label Verification	server		Card Reader (Application Software)	7
Call Label Denial	server		Card Reader (Application Software)	8
Send an SMS request	server		Application software (card reader)	9
Send a text message to confirm	server		Card Reader (Application Software)	10
Send a message to refuse	server		Card Reader (Application Software)	11
Batch Call Label Request	server		Application software (card reader)	12
Batch Call Label Confirmation	server		Card Reader (Application Software)	13
Batch call label rejection	server		Card Reader (Application Software)	14
Send a heartbeat request	server		Card Reader (Application Software)	15
Heartbeat Request Confirmation	server		Application software (card reader)	16

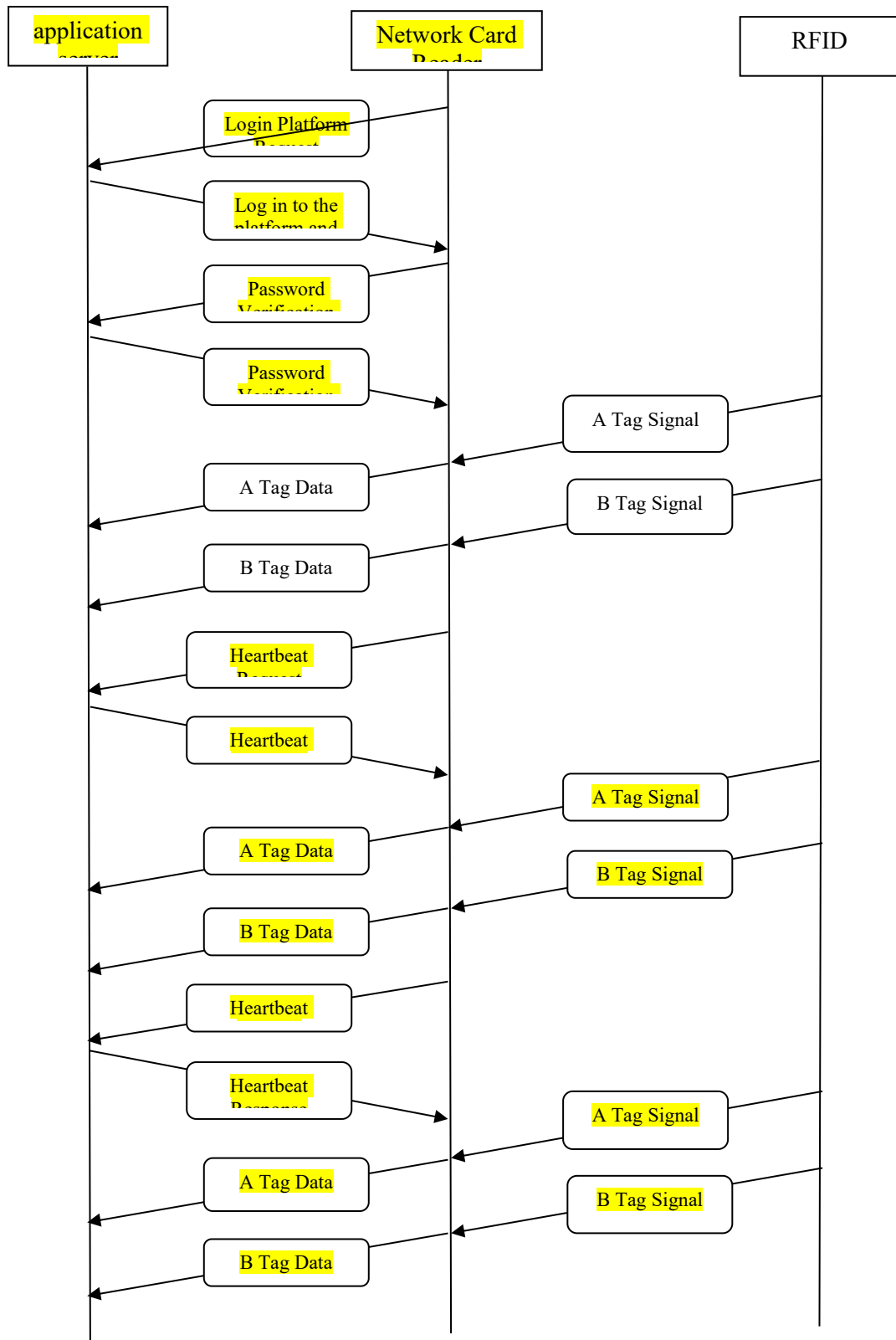
Keep			
Login Platform Request	client	Card Reader (Application Software)	32
Log in to the platform and respond	client	Application software (card reader)	33
Password Verification Request	client	Card Reader (Application Software)	34
Password Verification Resnonse	client	Application software (card reader)	35
Send electronic tag information	client	Card Reader (Application Software)	36
Send a heartbeat request	client	Card Reader (Application Software)	37
Heartbeat Request Confirmation	client	Application software (card reader)	38
Call Tag Request	client	Application software (card reader)	39
Call Label Verification	client	Card Reader (Application Software)	40
Call Label Denial	client	Card Reader (Application Software)	41
Send an SMS request	client	Application software (card reader)	42
Send a text message to confirm	client	Card Reader (Application Software)	43
Send a message to refuse	client	Card Reader (Application Software)	44
Batch Call Label Request	client	Application software (card reader)	45
Batch Call Label Confirmation	client	Card Reader (Application Software)	46
Batch call label rejection	client	Card Reader (Application Software)	47

9.3 Message Interaction Process

[Device Awaits Connection] Process



[Device Active Connection] Process



9.4 Message Content Description

-----[Card Reader Connection Waiting Mode]-----

1 Login Request (0x01)

explain :

The user application software sends a login request to the card reader.

Message content:

Length (byte)	content
16	Username (string)
16	Password (string)
1	Heartbeat cycle duration, in seconds

Username/Password

The default username for the card reader is "admin" and the default password is "888888".

A string is a sequence of characters ending with the character "\\0" (0x00).

Heartbeat cycle duration

The card reader must send a "heartbeat request" message to the software platform after the heartbeat cycle time expires. If the card reader fails to receive a response from the application software after three heartbeat requests, the connection is deemed failed, and the reporting of tag information is discontinued.

```
44 53 52 46 04 01 5C 82 00 21 61 64 6D 69 6E 00 00 00 00 00 00 00 00 00 00 00 00 38 38 38 38 38
38 00 00 00 00 00 00 00 00 00 00 00 0A
```

2 Login Response (0x02)

Message content:

Length (byte)	content
1	Login result (0: successful; other values: failed)
4	equipment ID

44 53 52 46 04 02 95 DA 00 05 00 00 00 00 01

消息解析	
44 53 52 46	: 通信协议标识
04	: 协议版本号
02	: 消息命令 (登录应答)
95 DA	: 长度和内容的 CRC16 (ModBus) 校验值
00 05	: 消息内容长度 (5)
00	: 登录结果
00 00 00 01	: 设备 ID

3. Electronic tag data (0x03)

explain :

The card reader sends the read electronic tag data to the application software.

Message content:

Length (byte)	content
4	Card reader device ID
1	Sub-station address code
4	Electronic tag card number
1	Electronic Tag Attributes
0~7	Extended data byte
1	Wireless signal field strength (dBm)

Substation address code: 1 byte. The substation number in the tag data read by Card Reading Antenna 0 is 0, while the substation number in the tag data read by Card Reading Antenna 1 is 1.

Electronic tag card number: 4 bytes, the ID code of the read electronic tag.

Electronic tag attributes: 1 byte, storing tag type, under-voltage

位 : 7	6	5	4	3	2	1	0
扩展数据长度			运动标志	标签类型		欠压标志	

flag, extended data length, etc.

Bit 0: Undervoltage flag. 1: Undervoltage; 0: Normal.

Bit 1-3: Tag type. 0: Regular tag; 1: Audio-visual tag; 2: SMS tag

Bit 4: Motion flag. This bit is valid only for motion detection tags. 0: Tag is stationary 1: Tag is moving

Position 5–7: Extended data length. When necessary, the tag can upload additional data (e.g., humidity). The extended data field follows immediately after the attribute byte and can be 0–7 bytes in length.

Extended data byte: 0–7 bytes. The length of the extended data is specified in the attribute byte and can carry tag-specific data such as temperature. The extended data can occupy up to 7 bytes or be omitted entirely.

Wireless signal field strength: 1 byte. This is the measured wireless field strength when reading the electronic tag signal, and the tag distance can be calculated based on the field strength value. Range: -128 dBm to 0 dBm

The larger the byte value, the stronger the actual wireless signal strength, indicating that the tag is closer to the reader.

Message example:

44 53 52 46 04 03 64 1B 00 0B 00 00 00 01 01 00 1B 81 7A 00 AB

消息解析

44 53 52 46	: 通信协议标识
04	: 协议版本号
03	: 消息命令 (标签信息)
64 1B	: 长度和内容的 CRC16 (ModBus) 校验值
00 0B	: 消息内容长度 (11)
00 00 00 01	: 设备 ID
01	: 分站号
00 1B 81 7A	: 标签 ID (1802618)
00	: 属性 (普通标签 电压正常 没有扩展字节)
AB	: 信号强度 (-85db)

4 Call Tag Request (0x06)

explain :

When the application software needs the specified tag to emit light and sound, it must send a tag request message.

Message content:

Length (byte)	content
1	Sub-station address code
4	Electronic tag card number
1	Remind duration (seconds)
1	Reminder Mode

Effective reminder duration:

After sending the reminder command, how long does the reminder remain valid? (After the reminder expires, the tag will continue to send reminders automatically for 10 seconds until the timeout.)

Reminder Mode:

The general definition is as follows (definitions of individual audio and visual tags may vary slightly)

Call Mode	explain
0	Only the green light is flashing
1	The green light is flashing and the
2	Only the red light is flashing
3	The red light is flashing and the
4	Only alternating red and green
5	Alternating red and green flashes +
255	Stop Reminder

Message example:

44 53 52 46 04 06 2C F5 00 07 00 00 1D 0E 54 3C 00

消息解析	
44 53 52 46	: 通信协议标识
04	: 协议版本号
06	: 消息命令 (呼叫标签请求)
2C F5	: 长度和内容的 CRC16 (ModBus) 校验值
00 07	: 消息内容长度 (7)
00	: 分站号
00 1D 0E 54	: 标签 ID (1904212)
3C	: 呼叫时长 (60 秒)
00	: 提醒模式 (发光、不发声)

5 Call Tag Confirmation (0x07)

explain :

The card reader confirms the application software's call tag request message. If the application software sends a "Call Tag Request" message but does not receive a "Call Tag Confirmation," it must resend the request message.

Message content:

Length (byte)	content
4	Card reader device ID
1	Sub-station address code
4	Electronic tag card number

Message example:

44 53 52 46 04 07 83 42 00 09 00 00 00 01 00 00 1D 0E 54

消息解析	
44 53 52 46	: 通信协议标识
04	: 协议版本号
07	: 消息命令 (呼叫标签确认)
83 42	: 长度和内容的 CRC16 (ModBus) 校验值
00 09	: 消息内容长度 (9)
00 00 00 01	: 设备 ID
01	: 分站号
00 1D 0E 54	: 标签 ID (1904212)

6 Call label rejection (0x08)

explain :

The card reader fails to respond to the application software's call tag request message, such as when the branch station is offline.

Message content:

Length (byte)	content
4	Card reader device ID
1	Sub-station address code
4	Electronic tag card number
1	Failure Reason Value

Message example:

44 53 52 46 04 08 B5 CD 00 0A 00 00 00 01 00 00 1D 0E 54 01

消息解析	
44 53 52 46	: 通信协议标识
04	: 协议版本号
08	: 消息命令 (呼叫标签拒绝)
B5 CD	: 长度和内容的 CRC16 (ModBus) 校验值
00 0A	: 消息内容长度 (10)
00 00 00 01	: 设备 ID
00	: 分站号
00 1D 0E 54	: 标签 ID (1904212)
01	: 分站不在线

7 Send an SMS request (0x09)

explain :

The application software sends an SMS to the specified tag (only SMS tags are valid).

Message content:

Length (byte)	content
1	Sub-station address code
4	label ID
2	SMS number (0–29999)
1	Year (actual year-2020)
1	moon
1	sun
1	Time
1	Section
1	second
1	SMS message length (0 – 110)
110	SMS message content

Message example:

44 53 52 46 04 09 E4 36 00 13 00 00 1D 0E 54 00 01 02 06 17 0F 0F 24 05 68 65 6C 6C 6F

消息解析	
44 53 52 46	: 通信协议标识
04	: 协议版本号
09	: 消息命令 (短信请求)
E4 36	: 长度和内容的 CRC16 (ModBus) 校验值
00 13	: 消息内容长度 (19)
00	: 分站号 (0)
00 1D 0E 54	: 标签 ID (1904212)
00 01	: 短信编号 (1)
02	: 年 (2022)
06	: 月 (6)
17	: 日 (23)
0F	: 小时 (15)
0F	: 分钟 (15)
24	: 秒 (36)
05	: 短信长度 (5)
68 65 6C 6C 6F	: 短信内容 "hello"

8 Send a text message for confirmation (0x0A)

explain :

The card reader confirmed receipt of the SMS message from the application software.

Message content:

Length (byte)	content
4	Card reader device ID
1	Sub-station address code
4	label ID

Message example:

44 53 52 46 04 0A 83 42 00 09 00 00 00 01 00 00 1D 0E 54

消息解析	
44 53 52 46	: 通信协议标识
04	: 协议版本号
0A	: 消息命令 (短信确认)
83 42	: 长度和内容的 CRC16 (ModBus) 校验值
00 09	: 消息内容长度 (9)
00 00 00 01	: 设备 ID
01	: 分站号
00 1D 0E 54	: 标签 ID (1904212)

9 Send an SMS rejection (0x0B)

explain :

The card reader receives SMS messages from the application software but cannot send them, for example, when the branch station is offline.

Message content:

Length (byte)	content
4	Card reader device ID
1	Sub-station address code
4	label ID
1	Failure Reason Value

Message example:

44 53 52 46 04 0B B5 CD 00 0A 00 00 00 01 00 00 1D 0E 54 01

消息解析	
44 53 52 46	: 通信协议标识
04	: 协议版本号
0B	: 消息命令 (短信拒绝)
B5 CD	: 长度和内容的 CRC16 (ModBus) 校验值
00 0A	: 消息内容长度 (10)
00 00 00 01	: 设备 ID
00	: 分站号
00 1D 0E 54	: 标签 ID (1904212)
01	: 分站不在线

10 Batch call tag request (0x0C)

explain :

When an application needs to call multiple tags simultaneously, it must send a batch tag call request message. A single message supports calling up to 80 tags.

Message content:

Length (byte)	content
1	Sub-station address code
1	Remind duration (seconds)
1	Tag count (1–80)
4	Tag 1: Card Number
1	Tag 1 Reminder Mode
4	Tag 2: Card Number
1	Tag 2 Reminder Mode
.....	
4	Tag N Card Number
1	Tag N Notification Mode

Effective reminder duration:

After sending the reminder command, how long does the reminder remain valid? (After the reminder expires, the tag will continue to send reminders automatically for 10 seconds until the timeout.)

Call Mode:

The general definition is as follows (definitions of individual audio and visual tags may vary slightly)

Call Mode	explain
0	Only the green light is flashing
1	The green light is flashing and the buzzer is sounding
2	Only the red light is flashing
3	The red light is flashing and the buzzer is sounding
4	Only alternating red and green flashes
5	Alternating red and green flashes + buzzer sound
255	Stop Reminder

Message example:

44 53 52 46 04 0C 2B 2A 00 12 01 3C 03 00 1D 0E 54 00 00 1D 0E 55 00 00 1D 0E 56 00

消息解析

44 53 52 46 : 通信协议标识
04 : 协议版本号
0C : 消息命令 (批量呼叫标签请求)
2B 2A : 长度和内容的 CRC16 (ModBus) 校验值
00 12 : 消息内容长度 (18)

01 : 分站号 (1)
3C : 呼叫保持时间 (60 秒)
03 : 批量呼叫标签数量 (3)
00 1D 0E 54 : 第一个标签 ID (1904212)
00 : 第一个标签提醒模式 (绿灯闪)
00 1D 0E 55 : 第二个标签 ID (1904213)
00 : 第二个标签提醒模式 (绿灯闪)
00 1D 0E 56 : 第三个标签 ID (1904214)
00 : 第三个标签提醒模式 (绿灯闪)

11 Batch Call Tag Confirmation (0x0D)

explain :

The card reader confirms the application software's batch call tag request message. If the application software sends a "Batch Call Tag Request" message but does not receive a "Batch Call Tag Confirmation," it must resend the request message.

Message content:

Length (byte)	content
4	Card reader device ID
1	Sub-station address code

Message example:

44 53 52 46 04 0D 05 DB 00 05 00 00 00 01 01

消息解析	
44 53 52 46	: 通信协议标识
04	: 协议版本号
0D	: 消息命令 (批量呼叫标签确认)
05 DB	: 长度和内容的 CRC16 (ModBus) 校验值
00 05	: 消息内容长度 (5)
00 00 00 01	: 设备 ID
01	: 分站地址码

12 Batch call tag rejection (0x0E)

explain :

The card reader cannot respond to the application software's batch call tag request messages, such as when a branch station is offline.

Message content:

Length (byte)	content
4	Card reader device ID
1	Sub-station address code
1	Failure Reason Value

Message example:

44 53 52 46 04 0E 9B B7 00 06 00 00 01 01 01

消息解析	
44 53 52 46	: 通信协议标识
04	: 协议版本号
0E	: 消息命令 (批量呼叫标签拒绝)
9B B7	: 长度和内容的 CRC16 (ModBus) 校验值
00 06	: 消息内容长度 (6)
00 00 00 01	: 设备 ID
01	: 分站号
01	: 分站不在线



13 Heartbeat Request (0x0F)

explain :

The application software and card reader can only exchange data with each other while maintaining a connection. Therefore, the card reader must periodically perform a handshake interaction with the application software.

Message content:

Length (byte)	content
4	Card reader device ID
1	Number of branches (fixed value: 2)
1	Station status for Station 0 (Card reader antenna 0)
1	Station 1 status (Card reader antenna 1)

Status Definition:

0: Normal

1: Antenna positioning failure

2: Reader malfunction

3: Reader congestion (too many tags preventing timely transmission, resulting in data loss)

Message example:

44 53 52 46 04 0F 7A 2B 00 07 00 00 01 02 01 01

消息解析	
44 53 52 46	: 通信协议标识
04	: 协议版本号
0F	: 消息命令 (心跳请求)
7A 2B	: 长度和内容的 CRC16 (ModBus) 校验值
00 07	: 消息内容长度 (7)
00 00 00 01	: 设备 ID
02	: 分站数量
01	: 0 号分站状态
01	: 1 号分站状态

14 Heartbeat Response (0x10)

explain :

The application software and card reader can only exchange data with each other while maintaining a connection. Therefore, the card reader must periodically perform a handshake interaction with the application software.

Message content:

not have

Message example:

44 53 52 46 04 10 B0 01 00 00

消息解析	
44 53 52 46	: 通信协议标识
04	: 协议版本号 V0.3
10	: 消息命令 (心跳应答)
B0 01	: 长度和内容的 CRC16 (ModBus) 校验值
00 00	: 消息内容长度 (0)

-----[Card Reader Active Connection Mode]-----

1. Platform login request (0x20)

explain :

The card reader actively logs in to the software platform based on the predefined platform address.

Message content:

Length (byte)	content
32	Device name: a string ending with "\\0".
2	Device version: the high byte contains the main version number, and the low byte contains the sub-version number.
16	Version description: a string ending with the terminator "\\0".

Message example:

```
44 53 52 46 04 20 E1 69 00 32 64 65 76 30 30 31 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 02 00 56 32 2E 30 30 2E 32 32 30 36 30 36 00 00 00 00
```

消息解析	
44 53 52 46	: 通信协议标识
04	: 协议版本号 V0.4
20	: 消息命令 (登录平台请求)
E1 69	: 长度和内容的 CRC16 (ModBus) 校验值
00 32	: 消息内容长度 (50)
64 65 76 30 30 31 00	: 设备名称
02 00	: 设备版本 (2.00)
56 32 2E 30 30 2E 32 32 30 36 30 36 00 00 00 00	: 版本描述

2. Platform login response (0x21)

explain :

The software platform confirms whether to allow the card reader to log in.

Message content:

Length (byte)	content
1	Login result: Successfully set to 0
256	Random number: Used for the MD5 calculation in the subsequent password verification process

Message example:

```
44 53 52 46 04 21 AC 94 01 01 00 12 1A F7 F4 F5 F5 1C A5 BB 57 16 94 9C EC F7 55 6C 80 64
CA 16 AD A7 E9 45 B7 FF BF 64 B4 3A B5 C9 F0 86 13 2D 8F 85 C2 60 74 9F 56 3A 62 9C 4C
D5 61 72 8F F9 64 5B 41 D8 28 2B B9 FC 5F E1 C8 7D 0E 7C 41 77 34 10 B8 BB AC 18 89 C5
54 0E 1D EF 6F 39 68 E4 48 C7 B6 56 19 1B A8 F4 2A 68 79 96 3D 7F 86 BB 2A E5 0E 36 C7
29 36 24 0A 74 50 21 72 62 5C BC A2 10 CF 28 50 77 94 34 5D F8 51 7C 45 37 EB E1 BA 2D
4C 38 8C 79 64 3F CC F7 6D D5 31 94 74 6A BA 61 15 B4 95 E6 86 A3 40 B8 D7 98 EE 4E 77
D2 2C 10 FB 28 C4 B1 1B FE E2 BF FD 72 75 78 B7 D6 D8 E0 0F 63 B2 10 84 2B 1B D1 93 50
00 69 33 74 C8 B5 A2 70 37 78 63 49 93 F3 88 60 06 B6 2D E8 44 B5 45 9D 6D 9E 99 B3 35 6A
0D 0D 42 33 25 B0 D6 45 C9 77 AD 77 45 08 29 BC 94 06 AC F5 DE 89 45 09 3F CB 90 38 CA
24 D7 AC CE
```

消息解析	
44 53 52 46	: 通信协议标识
04	: 协议版本号 V0.4
21	: 消息命令 (登录平台应答)
AC 94	: 长度和内容的 CRC16 (ModBus) 校验值
01 01	: 消息内容长度 (257)
00	: 登录成功
12 1A F7 F4 F5 F5 1C A5 BB 57 16 94 9C EC F7 55	: 随机数
...	
...	

3 password authentication request (0x22)

explain :

The card reader performs legitimacy verification with the software platform based on the preset password.

Message content:

Length (byte)	content
16	MD5 password: The MD5 value of a password consisting of a 256-byte random number and 32 password characters (if the length is less than 32 bytes, pad with zeros at the end).

Message example:

44 53 52 46 04 22 50 1A 00 10 D4 0C 63 F7 4B 7C B5 D2 82 BF 69 8A EA 1E 53 C5

消息解析	
44 53 52 46	: 通信协议标识
04	: 协议版本号 V0.4
22	: 消息命令 (口令验证请求)
50 1A	: 长度和内容的 CRC16 (ModBus) 校验值
00 10	: 消息内容长度 (16)
D4 0C 63 F7 4B 7C B5 D2 82 BF 69 8A EA 1E 53 C5 : 口令 MD5	

4-command verification response (0x23)

explain :

The software platform confirms whether to allow the card reader to log in.

Message content:

Length (byte)	content
1	Verification result: Successfully fixed to 0
1	Heartbeat cycle duration, in seconds
4	Card reader device ID

Message example:

44 53 52 46 04 23 CA B3 00 06 00 0F 00 00 00 01

消息解析	
44 53 52 46	: 通信协议标识
04	: 协议版本号 V0.4
23	: 消息命令 (口令验证应答)
CA B3	: 长度和内容的 CRC16 (ModBus) 校验值
00 06	: 消息内容长度 (6)
00	: 验证成功
0F	: 心跳周期
00 00 00 01	: 读卡器设备 ID

Heartbeat cycle duration

The card reader must send a "heartbeat request" message to the software platform after the heartbeat cycle time expires. If the card reader fails to receive a response from the application software after three heartbeat requests, the connection is deemed failed, and the reporting of tag information is discontinued.

5 Electronic tag data (0x24)

explain :

The card reader sends the read electronic tag data to the application software.

Message content:

Length (byte)	content
4	Card reader device ID
1	Sub-station address code
4	Electronic tag card number
1	Electronic Tag Attributes
0~7	Extended data byte
1	Wireless signal field strength (dBm)

Card reader device ID: 4 bytes, the assigned card reader device ID.

Sub-station address code: 1 byte, representing the unique identifier for both the network reader and the connected RS485 reader. If the tag is read by the network reader, the sub-station number is 0 or 1 (corresponding to reader antenna 0 or 1). If the tag is read by an extended RS485 reader, the sub-station number is the reader's address code plus 2 (ranging from 2 to 33).

Electronic tag card number: 4 bytes, the ID code of the read electronic tag.

Electronic tag attributes: 1 byte, storing tag type, under-voltage

位 : 7	6	5	4	3	2	1	0
扩展数据长度			运动标志	标签类型			欠压标志

flag, extended data length, etc.

Bit 0: Undervoltage flag. 1: Undervoltage; 0: Normal.

Bit 1-3: Tag type. 0: Regular tag; 1: Audio-visual tag; 2: SMS tag

Bit 4: Motion flag. This bit is valid only for motion detection tags. 0: Tag is stationary 1: Tag is moving

Position 5–7: Extended data length. When necessary, the tag can upload additional data (e.g., humidity). The extended data field follows immediately after the attribute byte and can be 0–7 bytes in length.

Extended data byte: 0–7 bytes. The length of the extended data is specified in the attribute byte and can carry tag-specific data such as temperature. The extended data can occupy up to 7 bytes or be omitted entirely.

Wireless signal field strength: 1 byte. This is the measured wireless field strength when reading the electronic tag signal, and the tag distance can be calculated based on the field strength value. Range: -128 dBm to 0 dBm

The larger the byte value, the stronger the actual wireless signal strength, indicating that the tag is closer to the reader.

Message example:

44 53 52 46 04 24 64 1B 00 0B 00 00 00 01 01 00 1B 81 7A 00 AB

消息解析	
44 53 52 46	: 通信协议标识
04	: 协议版本号 V0.4
24	: 消息命令 (标签消息)
64 1B	: 长度和内容的 CRC16 (ModBus) 校验值
00 0B	: 消息内容长度 (11)
00 00 00 01	: 设备 ID (1)
01	: 分站号 (1)
00 1B 81 7A	: 标签 ID (1802618)
00	: 属性 (普通标签 电压正常 没有扩展字节)
AB	: 信号强度 (-85db)

6 Heartbeat request (0x25)

explain :

The application software and card reader can only exchange data with each other while maintaining a connection. Therefore, the card reader must periodically perform heartbeat interactions with the application software.

Message content:

Length (byte)	content
4	Card reader device ID
1	Number of branches (fixed value: 2)
1	Station status for Station 0 (the card reader antenna 0 connected to the device itself)
1	Status of Station 1 (Card reader antenna 1 connected to the device itself)

Status Definition:

0: Normal

1: Antenna positioning failure

2: Reader malfunction

3: Reader congestion (too many tags preventing timely transmission, resulting in data loss)

Message example:

44 53 52 46 04 25 7A 2B 00 07 00 00 00 01 02 01 01

消息解析	
44 53 52 46	: 通信协议标识
04	: 协议版本号 V0.4
25	: 消息命令 (心跳请求)
7A 2B	: 长度和内容的 CRC16 (ModBus) 校验值
00 07	: 消息内容长度 (7)
00 00 00 01	: 设备 ID (1)
02	: 分站数量 (2)
01 01	: 0、1 号分站状态 (读卡器自身的两个天线)

7 Heartbeat Response (0x26)

explain :

The application software and card reader can only exchange data with each other while maintaining a connection. Therefore, the card reader must periodically perform heartbeat interactions with the application software.

Message content:

not have

Message example:

44 53 52 46 04 26 B0 01 00 00

消息解析	
44 53 52 46	: 通信协议标识
04	: 协议版本号 V0.4
26	: 消息命令 (心跳应答)
B0 01	: 长度和内容的 CRC16 (ModBus) 校验值
00 00	: 消息内容长度 (0)

8 Call Tag Request (0x27)

explain :

When the application software needs the specified tag to emit light and sound, it must send a tag request message.

Message content:

Length (byte)	content
1	Sub-station address code
4	Electronic tag card number
1	Remind duration (seconds)
1	Reminder Mode

Effective reminder duration:

After sending the reminder command, how long does the reminder remain valid? (After the reminder expires, the tag will continue to send reminders automatically for 10 seconds until the timeout.)

Call Mode:

The general definition is as follows (definitions of individual audio and visual tags may vary slightly)

Call Mode	explain
0	Only the green light is flashing
1	The green light is flashing and the
2	Only the red light is flashing
3	The red light is flashing and the
4	Only alternating red and green
5	Alternating red and green flashes +
255	Stop Reminder

Message example:

44 53 52 46 04 27 2C F5 00 07 00 00 1D 0E 54 3C 00

消息解析	
44 53 52 46	: 通信协议标识
04	: 协议版本号 V0.4
27	: 消息命令 (呼叫标签请求)
2C F5	: 长度和内容的 CRC16 (ModBus) 校验值
00 07	: 消息内容长度 (7)
00	: 分站号 (0)
00 1D 0E 54	: 标签 ID (1904212)
3C	: 有效时间 (60 秒)
00	: 提醒模式 (发光 不发声)

9 Call Tag Confirmation (0x28)

explain :

The card reader confirms the application software's call tag request message. If the application software sends a "Call Tag Request" message but does not receive a "Call Tag Confirmation," it must resend the request message.

Message content:

Length (byte)	content
4	Card reader device ID
1	Sub-station address code
4	Electronic tag card number

Message example:

44 53 52 46 04 28 83 42 00 09 00 00 00 01 00 00 1D 0E 54

消息解析	
44 53 52 46	: 通信协议标识
04	: 协议版本号 V0.4
28	: 消息命令 (呼叫标签确认)
83 42	: 长度和内容的 CRC16 (ModBus) 校验值
00 09	: 消息内容长度 (9)
00 00 00 01	: 设备 ID (1)
00	: 分站号 (0)
00 1D 0E 54	: 标签 ID (1904212)

10 Call tag rejection (0x29)

explain :

The card reader fails to respond to the application software's call tag request message, such as when the branch station is offline.

Message content:

Length (byte)	content
4	Card reader device ID
1	Sub-station address code
4	Electronic tag card number
1	Failure Reason Value

Message example:

44 53 52 46 04 29 B5 CD 00 0A 00 00 00 01 00 00 1D 0E 54 01

消息解析	
44 53 52 46	: 通信协议标识
04	: 协议版本号 V0.4
29	: 消息命令 (呼叫标签拒绝)
B5 CD	: 长度和内容的 CRC16 (ModBus) 校验值
00 0A	: 消息内容长度 (10)
00 00 00 01	: 设备 ID (1)
00	: 分站号 (0)
00 1D 0E 54	: 标签 ID (1904212)
01	: 分站不在线

11 Send an SMS request (0x2A)

explain :

The application software sends an SMS to the specified tag (only SMS tags are valid).

Message content:

Length (byte)	content
1	Sub-station address code
4	label ID
2	SMS number (0–29999)
1	Year (actual year-2020)
1	moon
1	sun
1	Time
1	Section
1	second
1	SMS message length (0 – 110)
110	SMS message content

Message example:

44 53 52 46 04 2A E4 36 00 13 00 00 1D 0E 54 00 01 02 06 17 0F 0F 24 05 68 65 6C 6C 6F

消息解析

44 53 52 46 : 通信协议标识
04 : 协议版本号 V0.4
2A : 消息命令 (短信请求)
E4 36 : 长度和内容的 CRC16 (ModBus) 校验值
00 13 : 消息内容长度 (19)

00 : 分站号 (0)
00 1D 0E 54 : 标签 ID (1904212)
00 01 : 短信编号 (1)
02 : 年 (2022)
06 : 月 (6)
17 : 日 (23)
0F : 小时 (15)
0F : 分钟 (15)
24 : 秒 (36)
05 : 短信长度 (5)
68 65 6C 6C 6F : 短信内容 "hello"

12 Send a text message for confirmation (0x2B)

explain :

The card reader confirmed receipt of the SMS message from the application software.

Message content:

Length (byte)	content
4	Card reader device ID
1	Sub-station address code
4	label ID

Message example:

44 53 52 46 04 2B 83 42 00 0900 00 00 01 00 00 1D 0E 54

消息解析	
44 53 52 46	: 通信协议标识
04	: 协议版本号 V0.4
2B	: 消息命令 (短信确认)
83 42	: 长度和内容的 CRC16 (ModBus) 校验值
00 09	: 消息内容长度 (9)
00 00 00 01	: 设备 ID (1)
00	: 分站号 (0)
00 1D 0E 54	: 标签 ID (1904212)

13 Send SMS rejection (0x2C)

explain :

The card reader receives SMS messages from the application software but cannot send them, for example, when the branch station is offline.

Message content:

Length (byte)	content
4	Card reader device ID
1	Sub-station address code
4	label ID
1	Failure Reason Value

Message example:

44 53 52 46 04 2C B5 CD 00 0A 00 00 00 01 00 00 1D 0E 54 01

消息解析	
44 53 52 46	: 通信协议标识
04	: 协议版本号 V0.4
2C	: 消息命令 (短信拒绝)
B5 CD	: 长度和内容的 CRC16 (ModBus) 校验值
00 0A	: 消息内容长度 (10)
00 00 00 01	: 设备 ID (1)
00	: 分站号 (0)
00 1D 0E 54	: 标签 ID (1904212)
01	: 分站不在线

14 Batch Call Tag Request (0x2D)

explain :

When an application needs to call multiple tags simultaneously, it must send a batch tag call request message. A single message supports calling up to 80 tags.

Message content:

Length (byte)	content
1	Sub-station address code
1	Remind duration (seconds)
1	Tag count (1–80)
4	Tag 1: Card Number
1	Tag 1 Reminder Mode
4	Tag 2: Card Number
1	Tag 2 Reminder Mode
.....	
4	Tag N Card Number
1	Tag N Notification Mode

Effective reminder duration:

After sending the reminder command, how long does the reminder remain valid? (After the reminder expires, the tag will continue to send reminders automatically for 10 seconds until the timeout.)

Call Mode:

The general definition is as follows (definitions of individual audio and visual tags may vary slightly)

Call Mode	explain
0	Only the green light is flashing
1	The green light is flashing and the
2	Only the red light is flashing
3	The red light is flashing and the
4	Only alternating red and green
5	Alternating red and green flashes +

255	Stop Reminder
-----	---------------

Message example:

44 53 52 46 04 2D 2B 2A 00 12 01 3C 03 00 1D 0E 54 00 00 1D 0E 55 00 00 1D 0E 56 00

消息解析	
44 53 52 46	: 通信协议标识
04	: 协议版本号 V0.4
2D	: 消息命令 (批量呼叫标签请求)
2B 2A	: 长度和内容的 CRC16 (ModBus) 校验值
00 12	: 消息内容长度 (18)
01	: 分站号 (1)
3C	: 呼叫保持时间 (60 秒)
03	: 批量呼叫标签数量 (3)
00 1D 0E 54	: 第一个标签 ID (1904212)
00	: 第一个标签提醒模式 (绿灯闪)
00 1D 0E 55	: 第二个标签 ID (1904213)
00	: 第二个标签提醒模式 (绿灯闪)
00 1D 0E 56	: 第三个标签 ID (1904214)
00	: 第三个标签提醒模式 (绿灯闪)

15 Batch Call Tag Confirmation (0x2E)

explain :

The card reader confirms the application software's batch call tag request message. If the application software sends a "Batch Call Tag Request" message but does not receive a "Batch Call Tag Confirmation," it must resend the request message.

Message content:

Length (byte)	content
4	Card reader device ID
1	Sub-station address code

Message example:

44 53 52 46 04 2E 05 DB 00 05 00 00 00 01 01

消息解析	
44 53 52 46	: 通信协议标识
04	: 协议版本号 V0.4
2E	: 消息命令 (批量呼叫标签确认)
05 DB	: 长度和内容的 CRC16 (ModBus) 校验值
00 05	: 消息内容长度 (5)
00 00 00 01	: 设备 ID (1)
01	: 分站号 (1)

16 Batch call tag rejection (0x2F)

explain :

The card reader cannot respond to the application software's batch call tag request messages, such as when a branch station is offline.

Message content:

Length (byte)	content
4	Card reader device ID
1	Sub-station address code
1	Failure Reason Value

Message example:

44 53 52 46 042F 9B B7 00 06 00 00 00 01 01 01

消息解析	
44 53 52 46	: 通信协议标识
04	: 协议版本号 V0.4
2F	: 消息命令 (批量呼叫标签拒绝)
9B B7	: 长度和内容的 CRC16 (ModBus) 校验值
00 06	: 消息内容长度 (6)
00 00 00 01	: 设备 ID (1)
01	: 分站号 (1)
01	: 分站不在线