![Invengo]

XC-RF868 Fixed Reader
User Manual

Welcome to become a user of Invengo RFID products!

We are very glad that you choose the XC–RF868 UHF RFID reader.

We hope that our equipment can bring convenience to your work.

Foreword

This manual is applicable to the following products:

XC-RF868 fixed reader.

 or logo are owned by Invengo Company.

The introduction and description of product characteristics and functions and other information in this manual are the latest valid information at that time, and all information is accurate at the time of printing. Invengo reserves the right to correct or change the information and instructions in this manual without prior notice and assumes no responsibility for it.

Safety Instructions

Warning sign

Improper operation may do harm to your health.
Improper operation may cause damage to the equipment.

Caution sign

If it is ignored, your operation may not be conducted smoothly.
If it is ignored, it may bring you undesirable results.

Catalogue

01 Instructions Before Use
XC–RF868 FIXED READER

⚠️ Warning: Please read this manual carefully before using the XC–RF868 reader. Improper use may cause serious personal injury or equipment damage.

To ensure the personnel safety, please ensure that the positions of all antennas meet the specified requirements of the supervision area.

🛈 This manual introduces the features, installation, debugging, operation, troubleshooting and other operation steps of XC–RF868 reader in detail.

🛈 This manual is applicable to the personnel for installing XC–RF868 reader, such as engineers or IT personnel who have RFID reader related experience or are familiar with RFID basic knowledge.
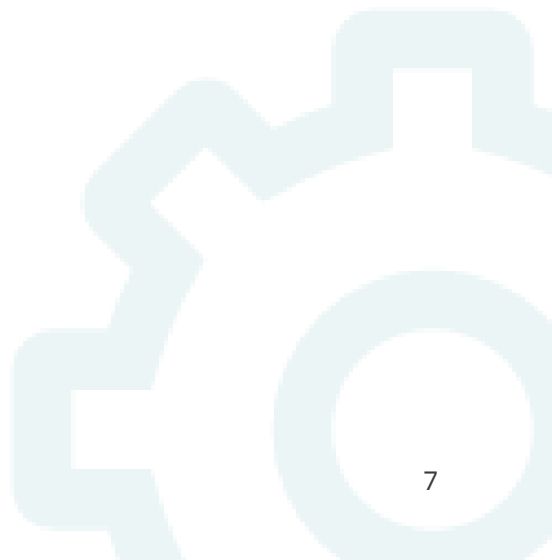
02 Product Overview

2.1 Product Features

XC-RF868 is a new-generation IOT reader independently designed and developed by Invengo. Relying on a powerful hardware system platform and with a built-in high-performance operating system, XC-RF868 can implement more intelligent application development and more conforms to the existing application concepts of IOT, edge computing and cloud processing.

XC-RF868 reader adopts 1.3GHz quad-core processor, 3G+16G large-capacity memory, and provides standardized and easy-to-use Web API interface, so that the IOT developers can easily build and deploy customized solutions. It also has reliable system stability and network adaptability, and is applicable to a variety of complex application environments. It fully supports ISO18000-6C (EPC GLOBAL UHF CLASS 1 GEN 2) protocol standard, emphasizes reliable reading and writing capability, and highlights single-label recognition and reading rate and multi-label recognition capability. It has various communication interfaces, supports wireless Wi-Fi, communication, and supports power over Ethernet (PoE+).

2.2 Main Application and Scope of Application

XC-RF868 is a six-port fixed UHF RFID reader, which can be widely used in intelligent manufacturing, supply chain management, digital warehouse management, commercial retail, access control management, assets management, logistics management and other fields. It effectively improves the overall work efficiency and reduces the error rate. This product conforms to UHF RFID standards of China, America, Europe and other countries and regions.

2.3 Applicable Regions and Frequency Points

- **Frequency band in China (CN):25 frequency points**
  920.625MHz ~ 924.375MHz, at a frequency hopping interval of 250kHz
- **Frequency band in North America (US):50 frequency points**
  902.75MHz ~ 927.25MHz, at a frequency hopping interval of 500kHz
- **Frequency band in Europe (EU):4 frequency points**
  865.7MHz ~ 867.5MHz, at a frequency hopping interval of 600kHz

2.4 Environmental Conditions

Operating temperature: -25℃~ + 70℃

Storage temperature: -40℃~ + 85℃

Humidity range: 5%~95%RH, without condensation

2.5 Power Supply Mode

- **Power by power adapter:**

AC input 100V~240V±10% 1.5A, DC output 24V/2.5A;

- **Power over Ethernet (POE+):**

The set output power of the reader shall not exceed 27dBm (AF protocol) /30dBm (AT protocol).

🔔 Notes:

1. This reader supports IEEE 802.3af/AT protocol POE. Users need to provide the POE switch and verify whether the switch supports IEEE 802.3AF protocol or IEEE 802.3AT protocol. CAT-Class-5 and above network cables shall be used for power supply.

2. DC power supply: 24V DC power supply is recommended, with current not less than 2.5A and ripple not greater than 100mV.

⚠️ The reader is equipped with our 24V/2.5A power adapter, and the technical indicators are as follows:

- The interface adopts the form of "internal positive pole and external negative pole".
- Order code: 108020007
- AC input: 100V~240V,50Hz~60Hz;
- DC output: 24V/2.5A
- CE, FCC and other certifications

2.6 Safety and Protective Measures

⚠️ The DC input voltage range of this product is DC20V~30V. POE power supply circuit is designed according to IEEE 802.3af/at standard. Please carefully check your voltage range before installation and use!

⚠️ When the product is working (radiating microwave power), the installation and debugging personnel shall be at least 20cm away from the antenna to meet the requirements of the clause on human exposure to the maximum allowable radio frequency (RF) radiation!

03 Introduction to Reader
XC-RF868 FIXED READER

This section introduces the external interfaces of the reader, including the details of communication interfaces, GPIO interfaces and status indicator lamps.

3.1 Instructions for Unpacking

⚠️ After opening the packaging box, please carefully check whether the accessories are complete according to the Packing List of the product. If there is any discrepancy or damage, please contact our company in time.

3.2 Interface Description

The following figure illustrates the communication interface and I/O interfaces on the XC-RF868 reader, as shown in Figure 3.1.
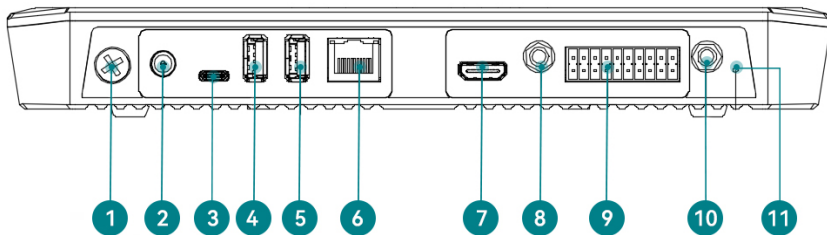

Figure 3.1Front Interfaces

The interfaces are described as follows:

① Grounding screw

② DC power input interface (DC 24V/2.5A)

③ USB3.0 Type-C interface, which can be connected to mouse, keyboard and U disk

④ USB3.0 Type-A interface

⑤ USB3.0 Type-A interface

⑥ RJ45 Gigabit Ethernet interface

⑦ HDMI audio and video output interface, which can be connected to external HD display

⑧ Wi-Fi antenna external connector (SMA)

⑨ GPIO control interface (see Table 3.2 for the definition)

⑩ 4G antenna external connector (SMA)

⑪ Hardware reset button
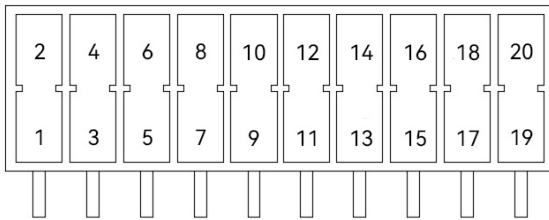
Figure 3.2 GPIO Interfaces

Table 3.2 Definitions of I/O Port Pins

Pin	Signal Definition	Remarks	
1	IO_INPUT1	Isolated input signal 1	
2	IO_INPUT1	Isolated input signal 1	
3	IO_INPUT2	Isolated input signal 2	
4	IO_INPUT2	Isolated input signal 2	VIH: 3~12V
5	IO_INPUT3	Isolated input signal 3	VIL:0~0.8V
6	IO_INPUT3	Isolated input signal 3	
7	IO_INPUT4	Isolated input signal 4	
8	IO_INPUT4	Isolated input signal 4	

9	RELAY_OUT_R1	Optocoupler relay output channel 1	
10	RELAY_OUT_L1	Optocoupler relay output channel 1	Load voltage and current AC/ DC30V/1000mA
11	RELAY_OUT_R2	Optocoupler relay output channel 2	
12	RELAY_OUT_L2	Optocoupler relay output channel 2	
13	RELAY_OUT_R3	Optocoupler relay output channel 3	
14	RELAY_OUT_L3	Optocoupler relay output channel 3	
15	RELAY_OUT_L4	Optocoupler relay output channel 4	
16	RELAY_OUT_R4	Optocoupler relay output channel 4	
17	\	\	
18	\	\	
19	Ground	GND (when using this ground, there is no isolation effect)	
20	Output +5V voltage	5V/100mA (when using this output power supply, there is no isolation effect)	
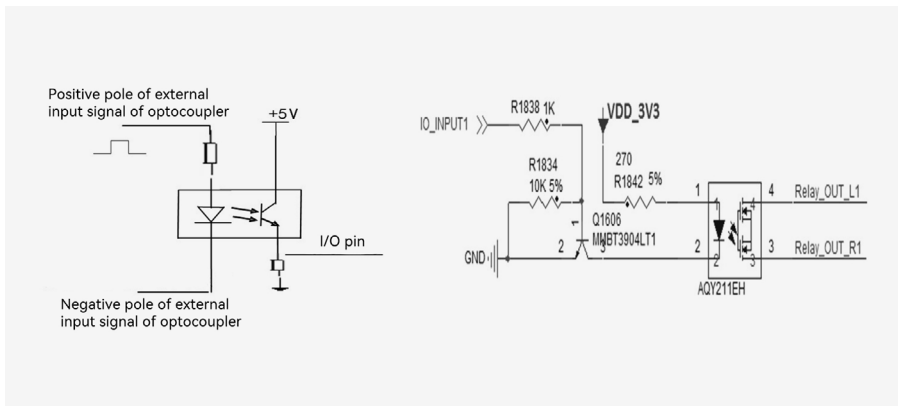
Figure 3.3 GPIO Control Diagram

The following figure shows the six RF ports on the XC-RF868 reader, as shown in Figure 3.4
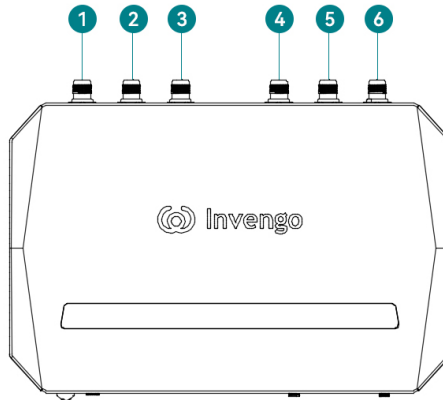
Figure 3.4 RF Connector Schematic Diagram

The interfaces are described as follows:

①~⑥ 6 RP-TNC RF antenna ports (ANT1 ~ ANT6)

3.3 Description of LED Panel

The LED indicator lamps of XC-RF868 reader are used to indicate the statuses of the reader, which mainly include power status, running status, antenna status and wireless communication status. Each LED has its own flash mode to communicate the status to the user. Table 3.5records the definition modes of LED.

Figure 3.5 LED Panel

Table 3.5 LED Indicator Lamp Status

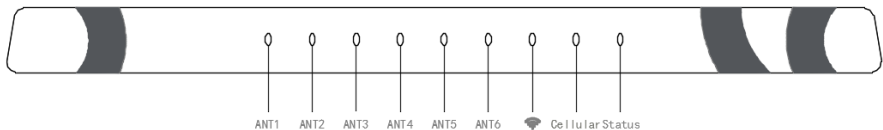| Mark No	Name	Status description
ANT1	Antenna 1 indicator lamp	If the white lamp is on, it indicates active transmission by antenna
ANT2	Antenna 2 indicator lamp	If the white lamp is on, it indicates active transmission by antenna
ANT3	Antenna 3 indicator lamp	If the white lamp is on, it indicates active transmission by antenna
ANT4	Antenna 4 indicator lamp	If the white lamp is on, it indicates active transmission by antenna
ANT5	Antenna 5 indicator lamp	If the white lamp is on, it indicates active transmission by antenna
ANT6	Antenna 6 indicator lamp	If the white lamp is on, it indicates active transmission by antenna
🛜	Wireless status indicator lamp	If the white lamp is normally on: it indicates that Wi-Fi has started without connection
		If the white lamp flashes: it indicates that Wi-Fi has established connection
Cellular	4G status indicator lamp	If the white lamp is normally on: it indicates that 4G has started without connection
		If the white lamp flashes: it indicates that 4G module has established connection with the base station
Status	Running status indicator lamp	If the white lamp is normally on: it indicates that the system is starting
		If the white lamp flashes, it indicates that the system has been started and is running normally

3.4 External Dimensions

This section introduces the external dimensions of the reader in detail.
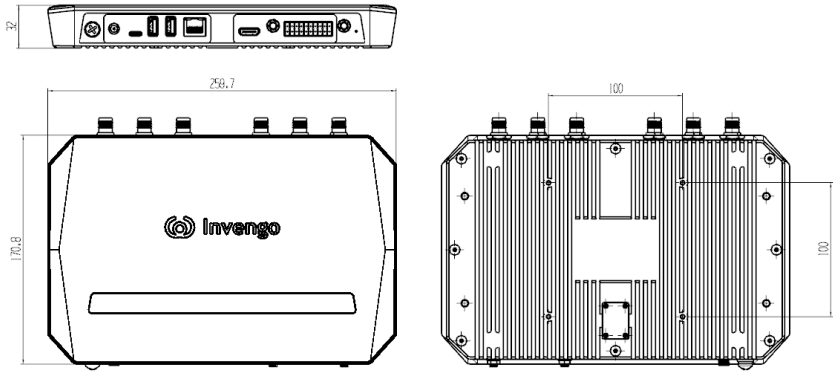

Figure 3.6 External Dimension Drawing

Volume parameters of XC–RF868 fixed reader:

- In metric system: 259.7 mm x 170.8 mm x 32 mm
- In British system: 10.22 in x 6.69 in x 1.26 in

3.5 Weight

The net weight of XC–RF868 fixed reader is about:

- In metric system: 1.6 Kg
- In British system: 3.53 lb

04 **Installation of Reader**
XC-RF868 FIXED READER

4.1 Installation Conditions

Before installing the XC-RF868 fixed reader, check whether the following installation conditions are met:

●   Meet the requirements of working environment.

●   The required accessories are complete and meet the required standards, and can constitute a complete read-write application environment.

4.2 Installation Steps

This section introduces the installation and connection steps in detail.

4.2.1 Select a Position for Fixing the Reader

Select an appropriate position for the reader. Ideally, the machine should always be kept away from direct sunlight, high humidity, extreme temperatures and electromagnetic interference sources. Any combination of these conditions may reduce the performance or shorten the service life of the equipment. In addition, if the coaxial cable is installed near another vertical object, the bending radius of the coaxial cable at the antenna connection point shall also be considered.

If you plan to use an external power adapter to power the reader, please make sure that a standard 100V~240 VAC socket is available nearby. Depending on the needs of the environment, the reader can be mounted on the wall or other object.

4.2.2 How to Fix the Reader

- Fix indirectly with fixing bracket

1) Install the fixing bracket on the reader with M6*8 screws, and then locate the four mounting slots of the reader, as shown in Figure 4.1
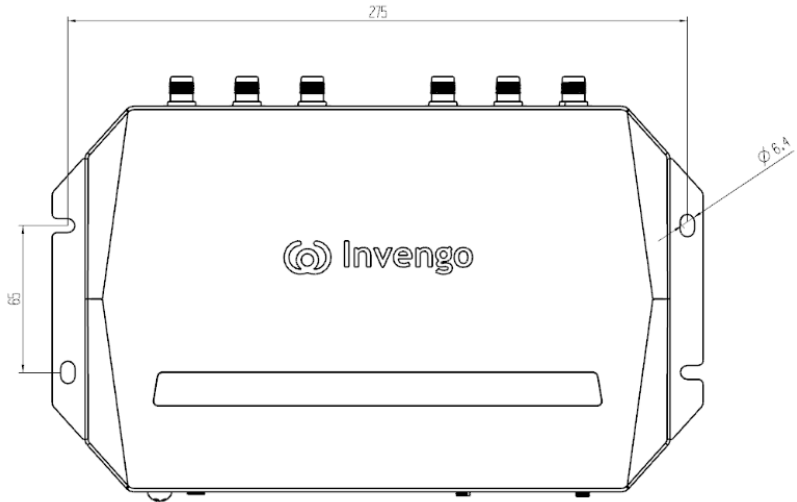

Figure 4.1 Reader Fixing Holes

2) Fix with "hexagon socket head cap screws M6 × 16_ oxidizing black_GB70.1" or "crosshead expansion boltΦ6×45_ galvanized". The reader can be installed horizontally or vertically.

- Fixing of VESA holes

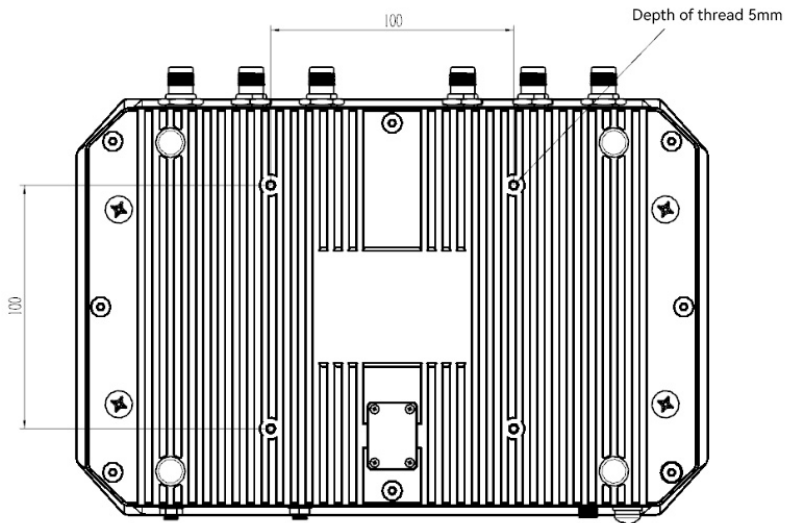1) Fix with standard VESA 100*100 fixing bracket, as shown in Figure 4.2 below.

Figure 4.2 VESA 100*100 Fixing Hole Positions

⚠ If any dust or water might be exposed, the communication interface port of the reader shall face down to prevent dust or water from entering.

⏚ Tighten and fix the ground cable (order code: 2200500034) on the reader with screws at the location of sign, and connect the other end to the earth.

4.2.3 Connect Antenna to Reader

The reader has six RF output ports, each of which is independent, bidirectional, with full-duplex transmission and receiving.

● How to connect the antenna

1) Install the antenna (holding pillar or gantry) according to the instructions provided by the antenna manufacturer

2) Connect the antenna cable to the RF port of the reader (the cable can be connected to any RF port).

3) Tighten each connection with fingers to ensure that the connection is firm. When the antenna and cable cannot be twisted any more, it means that the antenna and cable have been tightened, as shown in Figure 4.3 below.
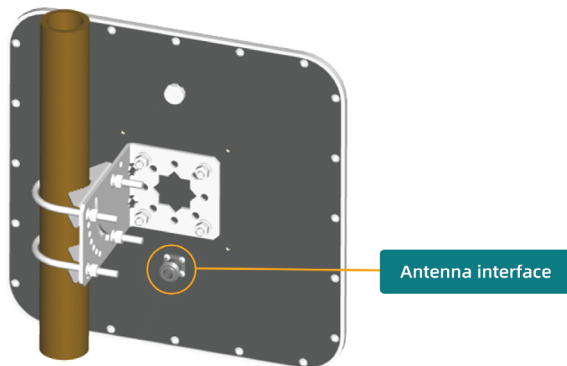

Figure 4.3 Antenna Installation and Connection Diagram

🛈 RF cable –TNC-N-type_6m (6m long; order code: 2200800009).

⚠ 50ohm impedance cable shall be used. Choose cables with high quality and low loss and high-quality connectors.

05 Reader Debugging

5.1 Preparation for Debugging

The structure dimension and installation steps of the reader have been described in detail. In order to make the reader run normally, the following preparations need to be made before debugging.

5.1.1 Personal Computer

- CPU: Pentium 4, dominant frequency: above 2.8G
- Memory: Above 2G Byte
- Hard disk: Above 20G
- Communication interface: RJ–45 network interface (10/100/1000M)
- Operating system: Windows 7, Windows 10 (Google and Mozilla Firefox browsers)

5.1.2 Reader Software

- XC–RF868 fixed reader Web API interface software
- Web demonstration software

⚠️ See User Manual for API Interface of XC–RF868 Fixed Reader for details.

5.1.3 External Antenna

As long as the selected antenna meets the following standards, it can be used with XC–RF868 fixed reader:

- Impedance: 50Ω;
- Voltage standing wave ratio: ≤1.4:1;
- Operating frequency: 840MHz ~ 960MHz.

5.1.4 External RF Cable

There are several schemes for selection of RF cables and connectors:

1. Use thin cables and type-N connector antennas

Cable (2200800009):

RF cable RP TNC–4 (male connector) _KSR240_N–J4Y(male connector)_6m

2. Use thick cables and type-N connector antennas

TNC–to–type–N RF adapter (1110800016):

RF adapter N/(RP)TNC–KK

RF cable N–J7B_SYWV–50–7_N–J7B_10m (2200400001)

RF cable N–J7B_SYWV–50–7_N–J7B_15m (2200400002)

3. Use thick cables and SMA connector antenna

RF adapter N/SMA–KJ (1110800098)

RF cable N–J7B_SYWV–50–7_N–J7B_10m (2200400001)

RF cable N–J7B_SYWV–50–7_N–J7B_15m (2200400002)

⚠️The ultra–long RF cable may cause the attenuation of the transmitted signal and the received echo signal, resulting in the deterioration of the read and write performance.

5.2 Power Supply of Reader

The reader has two power supply modes, namely, power by power adapter or power over Ethernet (PoE).

If the network switch is used as PoE switch, the reader will automatically power on when it is connected to the network. If a standard power adapter is used, the AC power plug shall be connected to a suitable 100-240VAC, 50-60Hz power socket.

In both cases, the starting sequence starts from supplying power to the reader. At this time, the reader is in power-on state, and the "Status" indicator lamp on the LED panel is always on. 15s later, the indicator lamp flashes regularly. After the buzzer makes "di-di" sound twice, the system initialization is completed, and the reader can be operated at this time.

⚠️ If the reader is being powered through the PoE and the reader detects that an external power supply has been connected, the reader will restart and switch to power supply by power adapter. However, if the reader is powered by the power adapter at the beginning and detects the connection to the PoE network switch, there is no change and the reader will continue to be powered by the power adapter. The power adapter has priority over PoE power supply because it can provide higher power when both power supplies are connected.

5.3 Network Connection of Reader

5.3.1 Network Connection (Linux System)

Connect the installed reader to the network, as shown in Figure 5.3.1 below. The reader network supports both static and DHCP modes. The factory default is DHCP mode, and there are two options in this mode.

• If the current network supports DHCP, the reader can be directly connected to the Ethernet network. After the reader is started, the network will automatically assign the corresponding IP address to the reader. At this time, the reader can be connected to communicate through the assigned IP address.

• If the current network does not support DHCP, the reader can be set to the static mode and to the IP address under the same network segment. At this time, the reader can be connected to communicate through the set IP address. For details, see Part I of "System Settings" in 5.1.
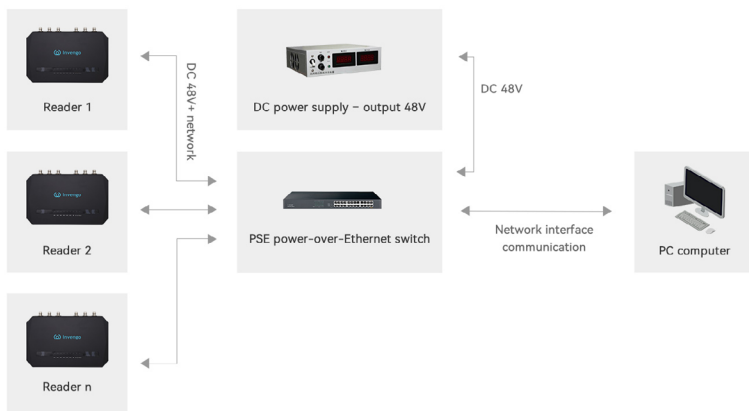

Figure 5.1 Ethernet Connection Diagram

⚠️ In the process of using the reader, if you do not know the IP address, how can you easily and quickly obtain the IP address?

● The reader is in dynamic (DHCP) mode.

1) Find the IP address through the third-party software "Bonjour Browser" according to the invengo-xx-xx-xx ("xx" is the last three bytes of the MAC address, and the MAC address is pasted on the side of the reader), as shown in Figure 5.2 below.

Figure 5.2 Bonjour Software

2) Use a mobile phone or tablet computer to connect to the Wi-Fi hotspot of the reader (name: invengo-xx-xx-xx, "xx" means the last three bytes of the MAC address, and the MAC address is pasted on the side of the reader; password: 88888888). Enter 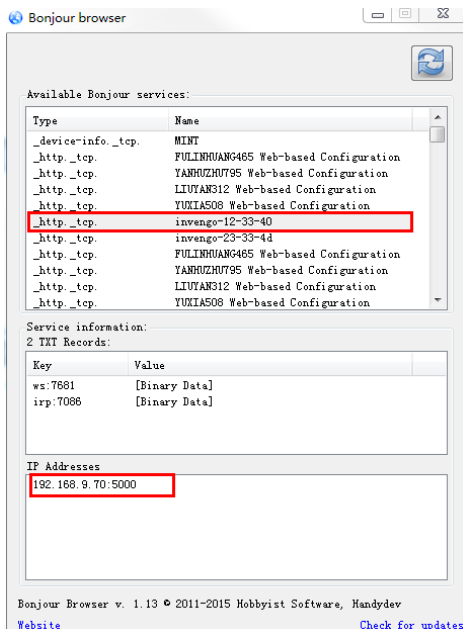192.168.12.1:5000 in the address bar of the mobile phone or tablet browser to enter the Web interface to query or modify the network connection mode and IP address of the reader. For details, see "System Settings" part in 6.11.

3) Connect the reader directly to the PC. At this time, the default IP address of the reader is 169.254.254.254. Modify the IP address of the PC to be in the same subnet as the reader (169.254.254.xxx). Open the browser address bar and enter the IP address of the reader (Google and Mozilla Firefox browsers are recommended). Then you can enter the reader Web interface to query or modify the reader network connection mode and IP address. For details, see "System Settings" part in 6.9.

● The reader is in static mode.

1) When the reader is in static mode, use the methods 1 and 2 in the dynamic mode to find the IP address.

⊙ How to confirm that the reader has successfully connected to the network?

1) Use the shortcut key "WIN+R" on the PC side and the "Operation" interface will pop up. Then enter "cmd" in the operation interface to enter the cmd interface.

2) In the cmd interface, "ping" the IP address of the target reader, and confirm whether the network can be pinged. If it is successful, it means that the communication is normal, as shown in Figure 5.3 below.
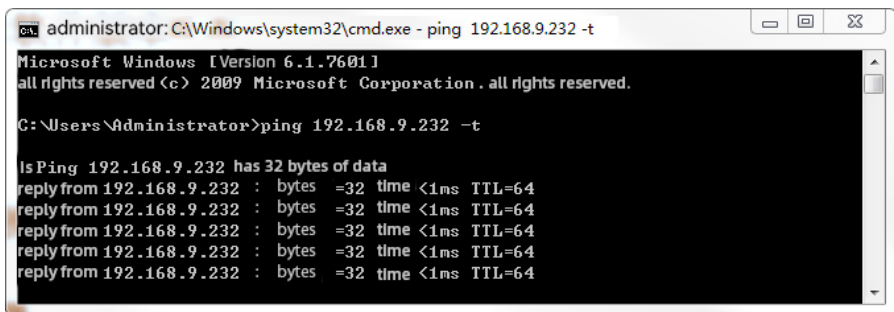

Figure 5.3 Ping Network

06 Reader Operation
XC-RF868 FIXED READER

6.1 Instructions for Use of Web GUI

6.1.1 Web Login

The reader can be operated after is powered on and started normally and connected to the network.

Step 1: Install Google or Mozilla Firefox browser into the PC, and type the IP address of the reader in the address bar: 192.168.**.**:5000 or invengo-xx-xx-xx. local:5000, "xx" is the last three bytes of the MAC address (the MAC address is pasted on the side of the reader), as shown in Figure 6.1.
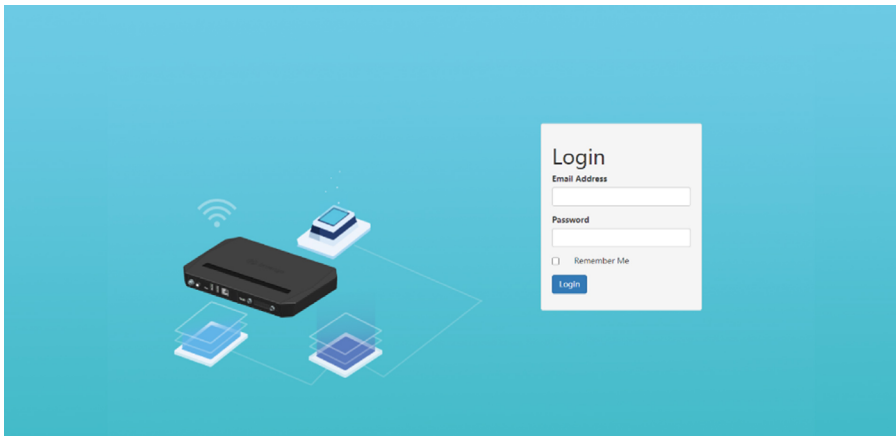

Figure 6.1 Web Login Interface

Step 2: Enter "user" and "password (123456)" to log into the reader operation interface, as shown in Figure 6.2 below.
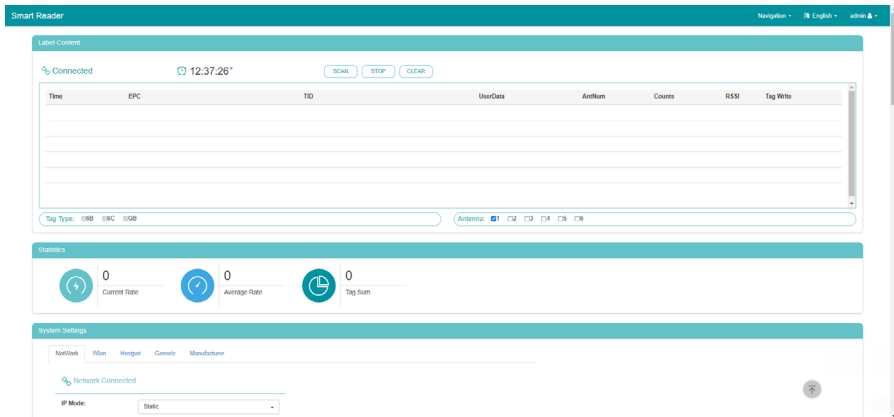

Figure 6.2 Web Interface

6.1.2 Web Operations

To quickly verify whether the function of the reader is normal, tag operation, parameter setting and parameter query can be performed through the embedded Web interface of the reader.

1. Tag operations

Tag operations include RFID settings, tag reading, tag writing, and read/write statistics.

1) RFID settings

The reader has been configured as the frequency band of corresponding region before delivery, such as CN/FCC/EU, and the configured region cannot be changed. If it is necessary to select the frequency band of other region, it needs to be set by professionals, as shown in Figure 6.3 below.

Figure 6.3 RFID Settings

2) Tag reading

Before reading and writing tags, it is required to "Select antenna" -> set the "power output" standard of the operating country (the default output is 30dBm) -> select "Tag type" 6C/6B/GB (the default is 6C) -> click "Start scanning" to display the EPC data of the read tag in the interface, as shown in Figure 6.4 below. Click the "Stop scanning" to end the current tag reading action. Click "Clear display" to clear the tag information in the box.
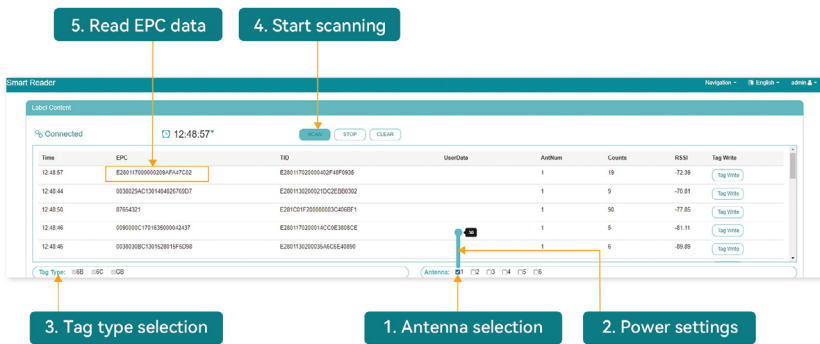
Figure 6.4 Tag Reading

⚠️RF settings shall match the operating country/region and comply with local laws and regulations. The user is responsible for ensuring that correct RF settings are used for operation, and is fully responsible for any fines and other losses caused by incorrect settings of reader or settings not conforming to national/ regional regulations.

3) Tag writing

Perform writing operation for the specified tag in EPC or user data area (USER). Click "Write tag" in the tag interface to enter the "Tag selection" interface. Select "Target area data (including EPC and user)" and click "OK", as shown in Figure 6.5 below.

Figure 6.5 Tag Selection

Enter the "Write tag" interface and write the target data in the "data to be written" box, as shown in Figure 6.6 below.
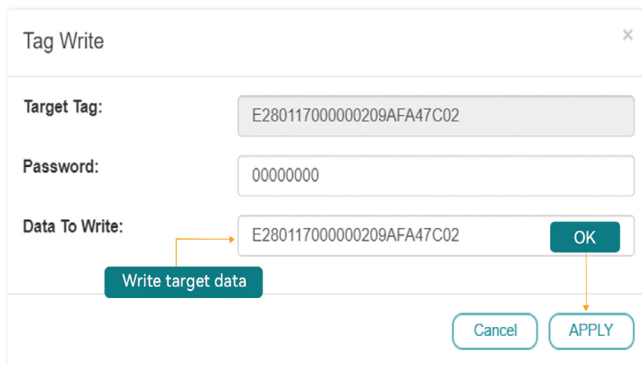
Figure 6.6 Tag Writing

Click OK and the interface of writing successfully will be displayed, as shown in Figure 6.7 below.
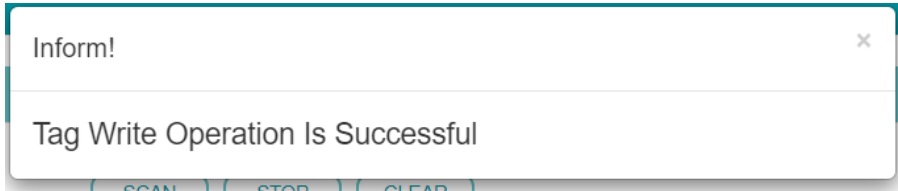
Figure 6.7 Writing Successfully

4) Read/write statistics

In the process of tag operation, current read/write data can be monitored in real time through the read/write statistics interface, such as instantaneous reading rate, average reading rate and total number of read tags, as shown in Figure 6.8 below.
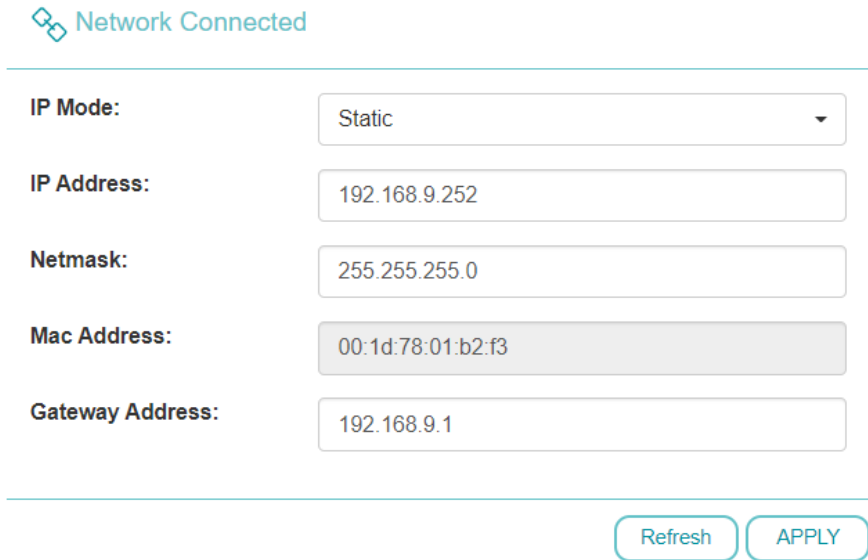
Figure 6.8 Read/write Statistics

2. System settings

System settings include wired network, wireless network, wireless hotspot, GPIO, general settings and manufacturer settings.

1) Wired network

Wired network settings include IP acquisition method, IP address, subnet mask and gateway address, as shown in Figure 6.9 below.

Figure 6.9 Wired Network Settings

⚠️The MAC address has been set before leaving the factory and cannot be changed by the user.

The reader can connect to the wireless router in the LAN through internal wireless Wi-Fi for communication, or uses terminal device to connect as a "Hotspot".

2) Wireless network

The reader connects to the wireless network as shown in Figure 6.10 below. Click "Scan" to display all the wireless networks that can be connected in the box. Click "Connect" and enter the account number and password to connect to the internal wireless LAN.
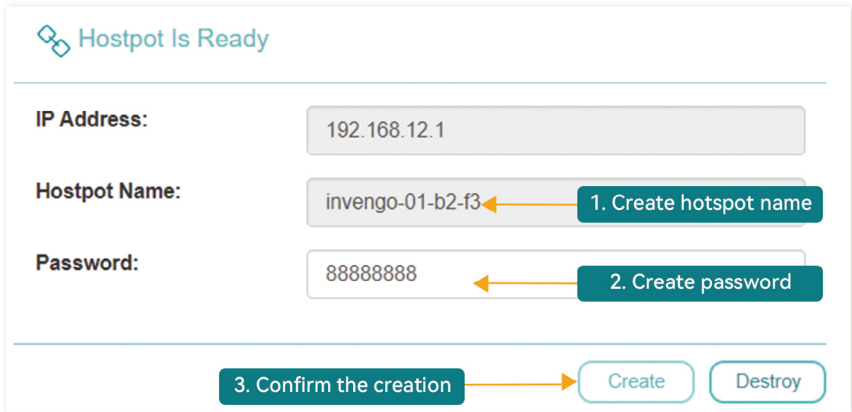
Figure 6.10 Wireless Network Settings

3) Wireless hotspot

The reader creates hotspots through internal Wi-Fi, as shown in Figure 6.11 below, and uses terminal devices (e.g. mobile phone, tablets, etc.) to connect and log in.
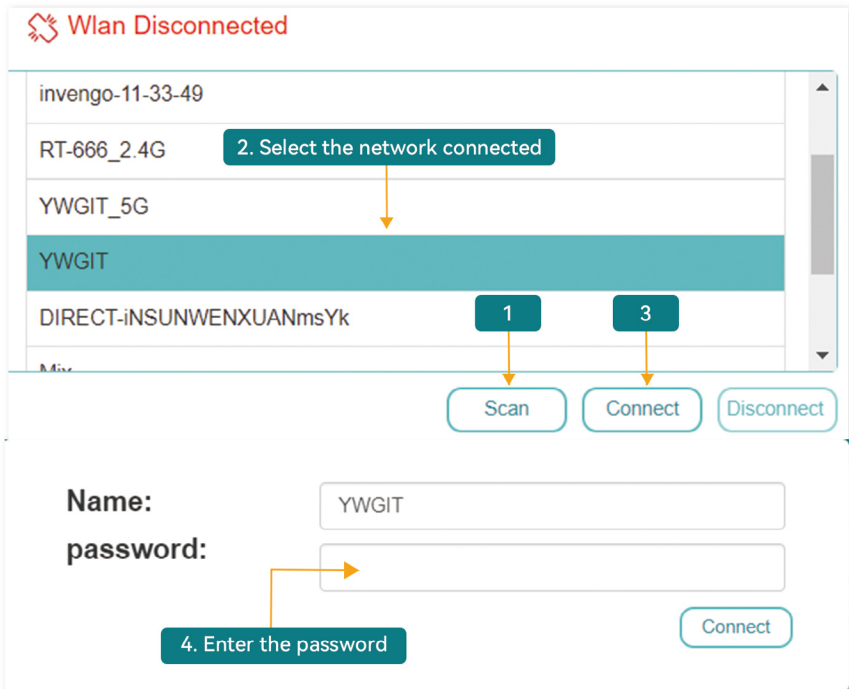

Figure 6.11 Wireless Hotspot Creation

4) GPIO

GPIO of the reader includes GPIO trigger reading and GPIO control.

GPIO has 4 trigger reading input ports, including GPIO1/2/3/4. Before triggering reading, set "Trigger reading condition, stop condition and scanning parameter configuration". The specific settings include:

Trigger reading conditions: No trigger, rising edge, falling edge.

Stop conditions: Delay stop, stop according to IO (triggered reverse level).

Scanning parameter configuration mainly includes antenna number, TID data length, start address of user data and user data length, as shown in Figure 6.12.

Figure 6.12 GPIO Trigger

⚠ In the four-channel GPIO triggered reading, as long as the "scanning parameters" of any channel are configured, the scanning parameter configuration of the other three channels will be the same.

GPIO control includes input status and output settings. The level status (high level or low level) of current input port can be queried through the input status. The output settings can control the short circuit or open circuit function of the output port, as shown in Figure 6.13 below.
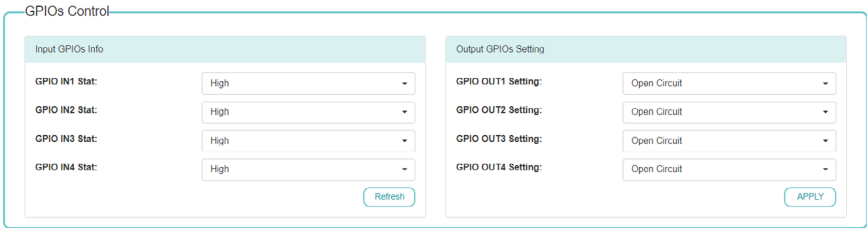
Figure 6.13 GPIO Control

3. System status

In order to display the current status information of the equipment itself, it can be monitored and located through the system status bar. The system status includes system resource status and connection status. The system resources mainly include CPU temperature, memory usage and disk usage; the connection status includes system service connection, RFID connection and antenna connection, as shown in Figure 6.14 below.
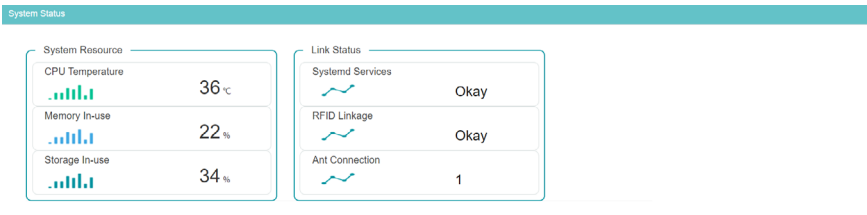
Figure 6.14 System Status

4. Version management

You can query basic information of the device by accessing the reader version management interface, including the product model and related software versions, such as WS-IRP version, Web application version and firmware version, as shown in Figure 6.15 below.

Figure 6.15 Version Information

5. Firmware upgrade

In addition to querying the basic information of the device in the version management interface, you can also upgrade the MCU firmware and application software of the device in the version management interface.

1) Place the firmware or application software to be upgraded in the computer to which the device is connected.

2) Click "Select a file" button in the software upgrade interface to find the file (MCU firmware or application software) you need to upgrade.

3) Click "Execute upgrade" as shown in Figure 6.16.

4) After finishing upgrade, you will be prompted that the burning is finished; otherwise, you will be prompted that the burning fails.
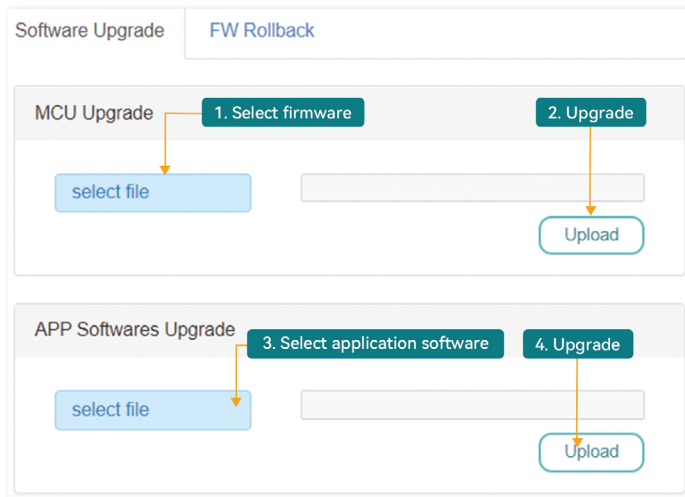
Figure 6.16 Software Upgrade

In case of upgrade failure or exception in the process of version upgrade, the firmware version rollback can be performed.

1) Enter the firmware version rollback interface.

2) Select the rollback version.

3) Click the "Execute upgrade" button.
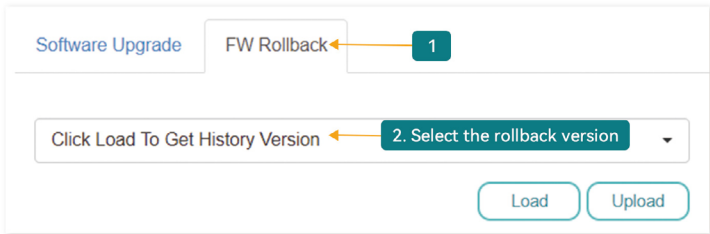
Figure 6.17 Firmware Version Rollback

07 Technical Parameters of Reader
XC-RF868 FIXED READER

7.1 Performance Parameters

7.1.1 Hardware and Operating System

Table 7.1Hardware and Operating System

Type	Description
Processor	Quad-core Cortex-A53, dominant frequency 1.3GHz
Memory	3GB RAM
	16GB FLASH
Operating system	Linux / Android OS

7.1.2 RFID Parameters

Table 7. 2 RFID Parameters

Type	Description
Air interface protocol	EPCglobal UHF Class 1 Gen 2
Transmitting power	11~33dbm (stepping: 1dB). PoE supports up to 30dBm
Frequency range	CN: 920.625MHz ~ 924.375MHz
	FCC: 902.75MHz ~ 927.25MHz
	EU: 865.7MHz ~ 867.5MHz
Reading rate	Up to 1000 times/second
Multi-tag	Up to 1000 piece/5 seconds, 100% full reading
Read range	0~30m (related to environment and configuration)
Write range	0~15m (related to environment and configuration)
Maximum receiving sensitivity	Up to -85dBm
Antenna impedance	50ohm

7.1.3 Mechanical and Environmental Parameters

Table 7.3 Mechanical and Environmental Parameters

Type	Description
Physical dimension	In metric system: 259.7 mm x 170.8 mm x 32 mm
	In British system: 10.22 in x 6.69 in x 1.26 in
Weight	In metric system: 1.6 kg
	In British system: 3.53 lb
Shell material	Die-cast aluminum alloy
Operating temperature	–25℃~ + 70℃
Storage temperature	–40℃~ + 85℃
Humidity	5%~95%RH, without condensation
Level of protection	IP50

7.2 Main Functions

7.2.1 Communication Function Interfaces

Table 7.4 Communication Function Interfaces

Type	Description
Ethernet	10/100/1000M Ethernet（RJ45）
Antenna interface	6xRP-TNC reversed-polarity interface
USB interface	2xUSB3.0 TYPE-A interface
	1xUSB3.0 Type-C interface
HDMI interface	Support
GPIO interface	Support 4-channel isolated input and 4-channel isolated output
Wi-Fi function	Support
Power supply mode	Support adapter and POE (802.3at) power supply

7.2.2 Other Functions

Table 7.5 Other Functions

Type	Description
Antenna detection	Support
Temperature detection	Support
System status	Support
Online upgrade	Support
Tag filtering	Support

08 Daily Maintenance and Repair
XC–RF868 FIXED READER

8.1 Daily Maintenance

The daily maintenance of the reader during the use mainly includes the following points:

- Check whether the RF connector is tightened.
- Check whether the screws of the reader and antenna are loose.
- Check whether the outer shielding layer is disconnected at the RF cable connector.
- Check whether the power line of the reader is firmly connected.

8.2 Common Fault Analysis and Solutions

Users may encounter various faults when using the reader. Common fault phenomena and solutions are listed here in combination with daily application.

1. Panel "status" indicator lamp is not on

☆ Check whether the power supply link is normal

☆ Check whether the positive and negative poles of the power supply are connected reversely

2. The network port cannot be connected

☆ Check whether the network cable is connected normally or loose.

☆ Check whether the IP of the reader is in the same network segment with the PC.

☆ Check whether the input IP address is correct.

☆ Check whether the IP addresses in the LAN conflict.

3. The reader could not read the tag

☆ Check whether the tag is damaged.

☆ Check whether the antenna connector physically connected is consistent with the antenna settings in the software.

☆ Check whether the tag type (6C/6B) is consistent with the selected type of the software.

☆ Check whether the tag is placed within the effective reading and writing range of the reader.

☆ Check whether there is electromagnetic interference between readers or other devices.

4. The tag reading range of the reader is close

☆ Check whether the frequency point setting of the reader is correct.

☆ Check whether the RF output power of the reader is small, and adjust the output power if necessary.

☆ Check whether the polarization direction of the tag and the antenna matches. If the antenna is vertically polarized, the tag should be placed vertically.

☆ Check whether the tag is a special tag. If the tag is an anti-metal tag, it needs to be placed on the metal surface to achieve the best reading effect.

☆ Check whether the RF cable connector connecting the reader and the antenna is loose.

☆ It is caused by normal aging of tag performance.

5. Slow tag reading speed or poor multi-tag performance

☆ Check whether there are tags with poor performance.

☆ Check whether the selection of "reader mode" in RFID settings is incorrect.

☆ Check whether the RF output power of the reader is small, and adjust the output power if necessary.

If you could not solve problems, please contact the customer service center or technical support department of our company.

8.3 Maintenance during Long-term Storage

If the reader is not used for a long time, please power off the reader, remove all cables, pack the reader and related accessories and store them in a relatively dry and well-ventilated place.

09 After-sales
XC-RF868 FIXED READER

9.1 After-sales Services

When you encounter any problems that you could not solve during use of the reader, please contact the customer service center of our company.

9.2 Other Notes

If the customer service personnel of our company decide that the user should return the reader for repair, the customer service representative will give you a goods return confirmation number RMA (return merchant authorization). Please write this number on the outside of the packaging box of the returned system, also write this number on a piece of paper and put it in the packaging box, so that the article returned by the user will be handled quickly.

When returning the reader for repair, please follow the following steps:

Carefully pack the reader and its accessories into the original anti-static foam packaging box. If the original packaging box is no longer available, please select a protective packaging box;

Cover the contents in the box with filling materials;

Put a note indicating the RMA number in the packaging box;

Write the RMA number and the word "Fragile" on the outside of the packaging box.

FCC Warning

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.

NOTE 1: 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.

NOTE 2: Any changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

RF exposure statement

This equipment complies with the FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator and any part of your body.

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V1.0

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