RFID Device User Manual

2024/9

Warning:

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment
Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
—Reorient or relocate the receiving antenna.
—Increase the separation between the equipment and receiver.
—Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
—Consult the dealer or an experienced radio/TV technician for help.

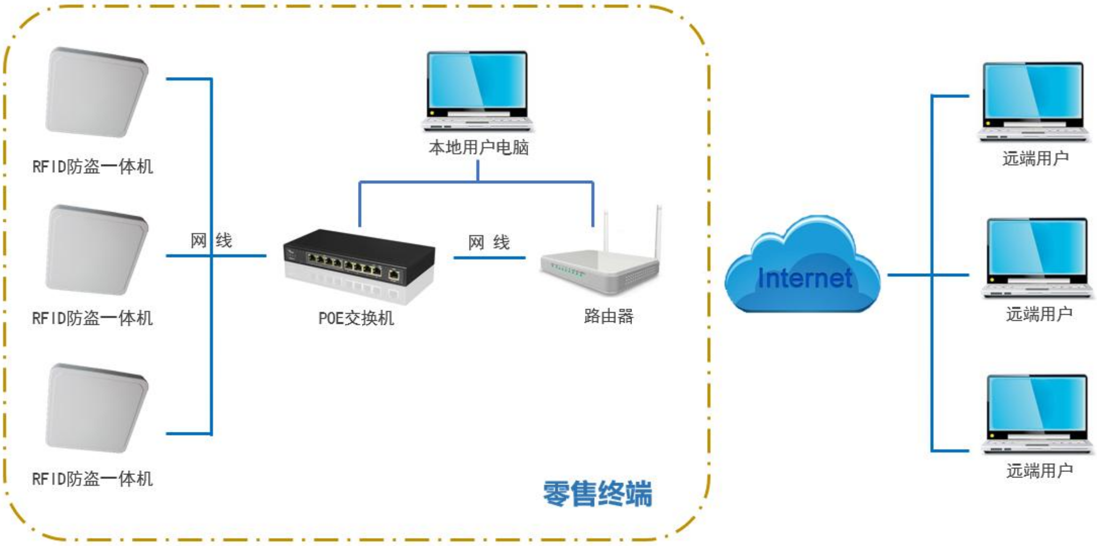
This equipment complies with radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

Introduction:

The RFID anti-theft device is an integrated smart security system that combines communication, power supply, RFID identification algorithms, and RFID detection into a single unit. The device is powered and transmits data directly through a POE switch or POE power supply module. It features a B/S (Browser/Server) architecture, allowing users to perform debugging and configuration through a web browser. The following sections detail the various debugging and configuration aspects of the device.

1、 Device Networking

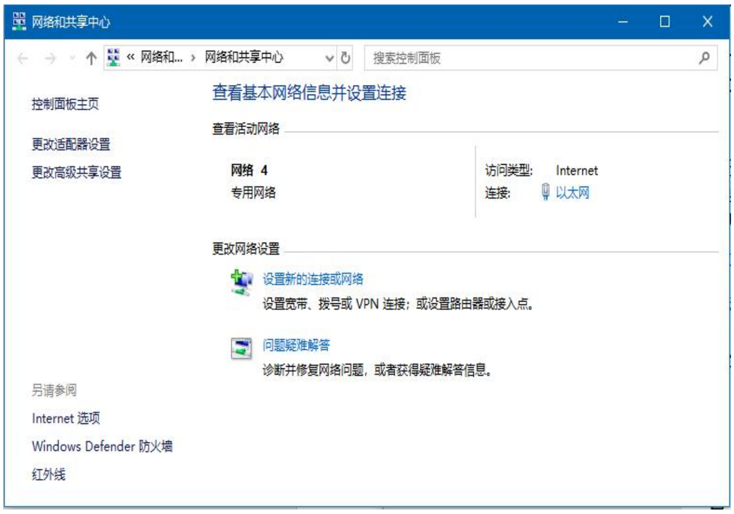
The RFID anti-theft device has network capabilities, allowing parameters to be viewed and configured through networked deployment.



Network Topology Diagram

The initial factory default IP address of the RFID anti-theft device is 192.168.1.8.

Remote access and debugging are possible if the network allows it. To begin, change the IP address of the computer connected to the RFID device so that your computer can successfully ping the RFID's IP address.



网络和共享中心

« 网络和... › 网络和共享中心

搜索控制面板

控制面板主页

更改适配器设置

更改高级共享设置

查看基本网络信息并设置连接

查看活动网络

网络 4
专用网络

访问类型: Internet
连接: 以太网

更改网络设置

设置新的连接或网络
设置宽带、拨号或 VPN 连接；或设置路由器或接入点。

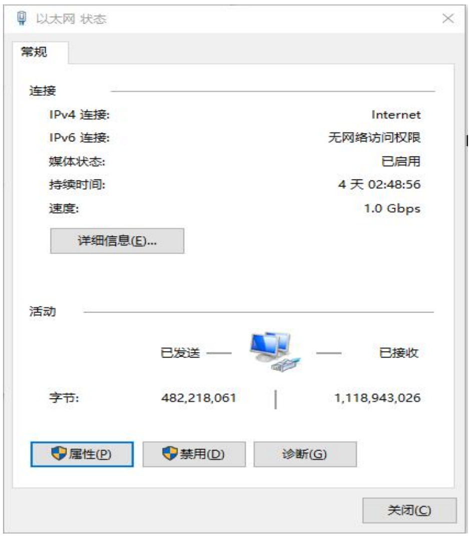
问题疑难解答
诊断并修复网络问题，或者获得疑难解答信息。

另请参阅

Internet 选项

Windows Defender 防火墙

红外线



以太网 状态

常规

连接

IPv4 连接: Internet

IPv6 连接: 无网络访问权限

媒体状态: 已启用

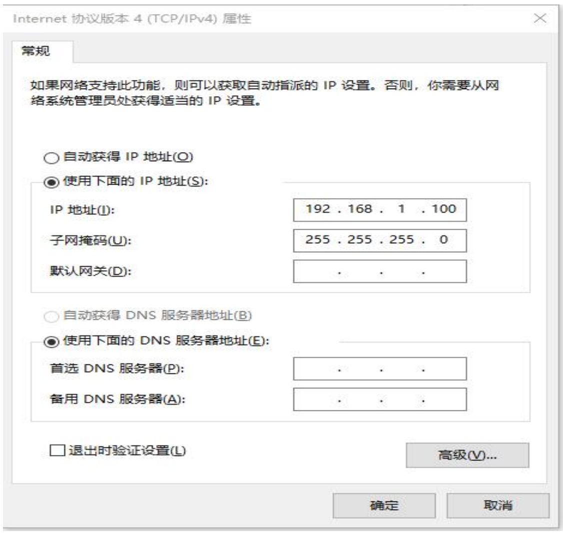
持续时间: 4 天 02:48:56

速度: 1.0 Gbps

活动

已发送 — 已接收

字节: 482,218,061 | 1,118,943,026



Internet 协议版本 4 (TCP/IPv4) 属性

常规

如果网络支持此功能，则可以获取自动指派的 IP 设置。否则，你需要从网络系统管理员处获得适当的 IP 设置。

○ 自动获得 IP 地址(O)

● 使用下面的 IP 地址(S):

IP 地址(I): 192 . 168 . 1 . 100

子网掩码(U): 255 . 255 . 255 . 0

默认网关(D): . . .

○ 自动获得 DNS 服务器地址(B)

● 使用下面的 DNS 服务器地址(E):

首选 DNS 服务器(P): . . .

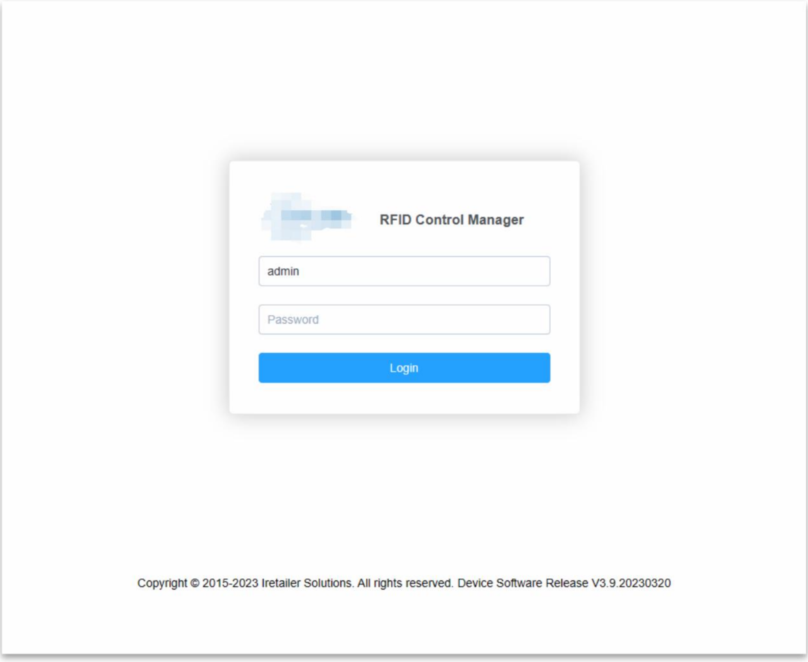
备用 DNS 服务器(A): . . .

□ 退出时验证设置(L)

Set the IP address of your computer to 192.168.1.x (where x is any number between 10 and 255). This will allow you to ping the device's IP address, which is the foundation for proceeding with subsequent operations.

2、 Logging into the Device

The RFID anti-theft device utilizes a B/S (Browser/Server) architecture, allowing users to log in and operate the firmware directly through a web browser.



RFID Control Manager

admin

Password

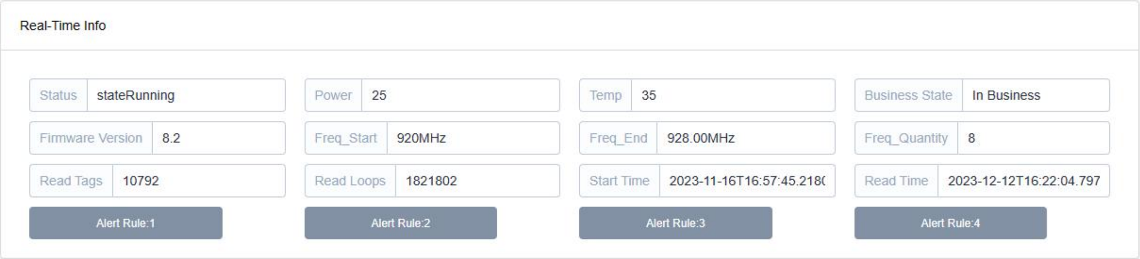
Copyright © 2015-2023 Iretailer Solutions. All rights reserved. Device Software Release V3.9.20230320

Note: Use IE 9 or higher versions (Google Chrome and Firefox are recommended).
Username: admin
Password: 123456@
Users have the option to set their own login password.

3、 RFID Settings

3. 1 Real-Time Information

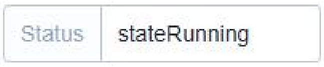
It displays the basic status of the RFID, including firmware version, number of tags read, current power, operating time, frequency status, device temperature, and other information.



Real-Time Info

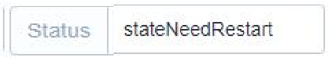
Status	stateRunning	Power	25	Temp	35	Business State	In Business
Firmware Version	8.2	Freq_Start	920MHz	Freq_End	928.00MHz	Freq_Quantity	8
Read Tags	10792	Read Loops	1821802	Start Time	2023-11-16T16:57:45.218(	Read Time	2023-12-12T16:22:04.797

3. 1. 1 Device Status: Refers to the antenna connection status



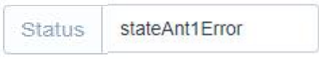
Status | stateRunning

Indicates the device is in normal working condition.



Status | stateNeedRestart

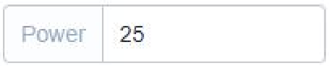
After saving the adjusted device parameters, the device is in the restart phase, which takes about 10 seconds.



Status | stateAnt1Error

It indicates that there is a fault with the antenna, it is not connected, or there is poor contact with the antenna's feeder line. It is necessary to turn off the ANT1 antenna in order to achieve normal operation.

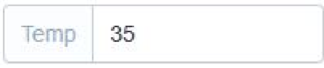
3.1.2 Device Power



Power	25

At this time, the displayed power is the power value of the ANT1 antenna. The specific power values for each antenna can be viewed in the power values of each channel on this page.

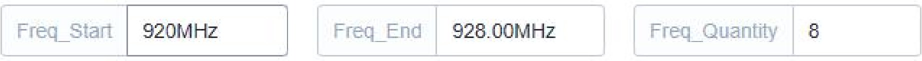
3.1.3 Device Temp



Temp	35

This displays the module temperature of the RFID, which is related to the transmitted power and the number of tags read. It is preferable for the temperature to be below 65°.

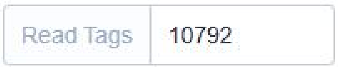
3.1.4 Frequency Range



Freq_Start	920MHz	Freq_End	928.00MHz	Freq_Quantity	8

The frequency band can be set according to the standards of different countries. The factory setting is 902 MHz - 926 MHz, which is the frequency band used in the United States. If required by the mall, please set it to the China II frequency band. The factory-set number of hopping points is 26

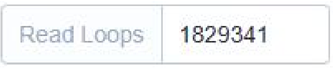
3.1.5 Read Tags



Read Tags	10792

Each time the antenna reads a tag's EPC number, it is counted here. Each count does not necessarily trigger an alarm, as the tag rules can filter out certain tags.

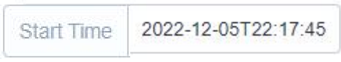
3.1.6 Read loops



Read Loops	1829341

When the device is powered on and the RFID module is working properly, the 'Cycle Count' continuously increments. If the 'Cycle Count' stops, it indicates that the module's reading operation has ceased or the device has crashed. When testing the echo value, the module's reading operation must also be paused, and at this time, the 'Cycle Count' will also stop.

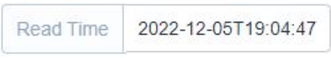
3.1.7 Startup Time



Start Time	2022-12-05T22:17:45

Most Recent Power-Up Time Logging

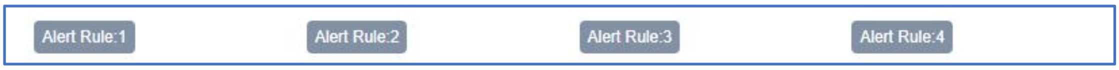
3.1.8 Read Time



Read Time	2022-12-05T19:04:47

When the RFID module reads a tag, the timestamp is continuously refreshed with new time records. This timetable is always rolling, and it attaches the correct timestamp to each alarmed tag.。

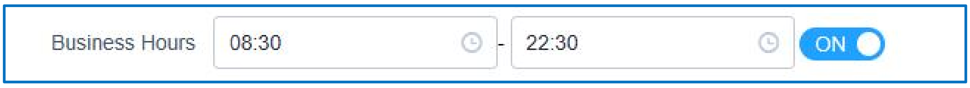
3.1.9 Alarm Indicator Bar



What is indicated here is real-time and occurs in synchronization with the onsite device. The alarm indication is for each rule's alarm, not for each antenna or channel. Each alarm rule has a combination relationship with the antenna channel, sound, sound volume, light, and light color. For specific configurations, refer to section 4.5.6

3.2 Setting the Daily Operating Hours of the Device

【OFF】 Turn off the function; the device is not controlled by operating hours.
【ON】 Activate the function;
This allows control over the device's daily start and stop times. Set the start time in the left column and the stop time in the right column. The time range is from 8:00 AM to 22:30 PM, with a setting interval of 15 minutes.



Business Hours 08:30 - 22:30 ON

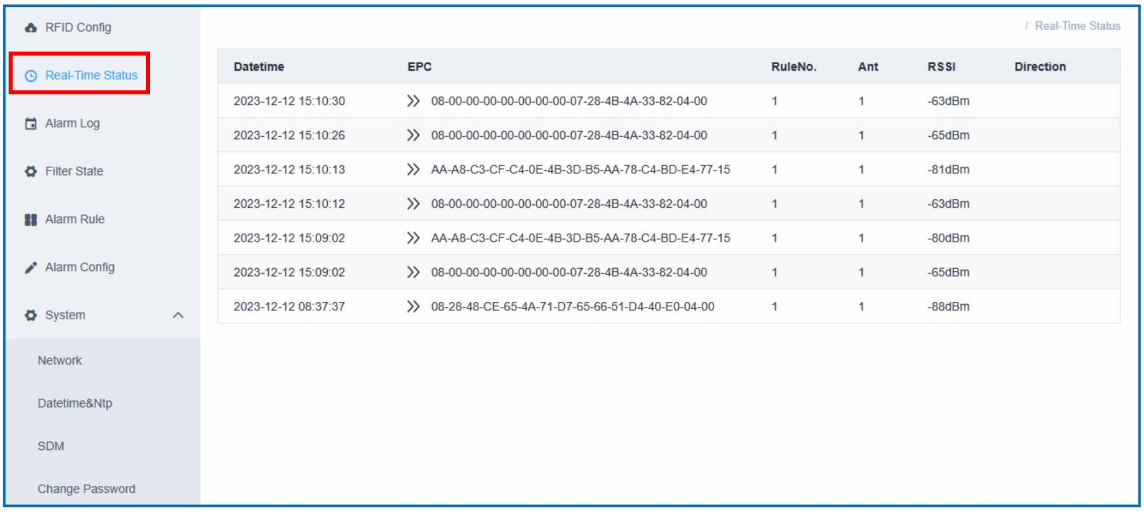
3.4 Parameter Settings

Default factory setting: 902-928

3.5 Antenna Power Configuration

Adjustment of power for each antenna channel: Used to adjust the sensitivity of the RFID anti-theft device in reading tags

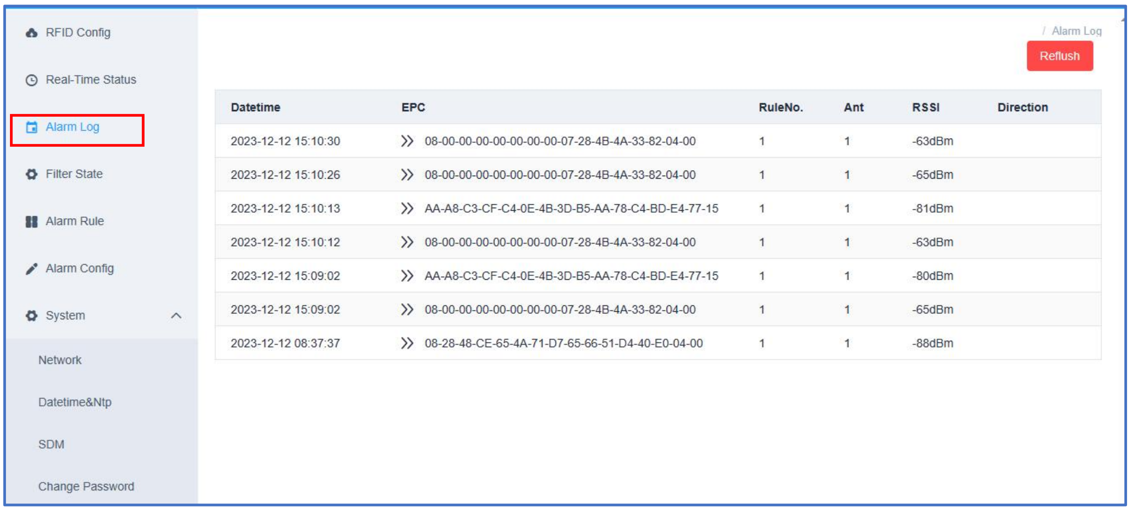
4、 Real-Time Status



Datetime	EPC	RuleNo.	Ant	RSSI	Direction
2023-12-12 15:10:30	» 08-00-00-00-00-00-00-00-07-28-4B-4A-33-82-04-00	1	1	-63dBm	
2023-12-12 15:10:26	» 08-00-00-00-00-00-00-00-07-28-4B-4A-33-82-04-00	1	1	-65dBm	
2023-12-12 15:10:13	» AA-A8-C3-CF-C4-0E-4B-3D-B5-AA-78-C4-BD-E4-77-15	1	1	-81dBm	
2023-12-12 15:10:12	» 08-00-00-00-00-00-00-00-07-28-4B-4A-33-82-04-00	1	1	-63dBm	
2023-12-12 15:09:02	» AA-A8-C3-CF-C4-0E-4B-3D-B5-AA-78-C4-BD-E4-77-15	1	1	-80dBm	
2023-12-12 15:09:02	» 08-00-00-00-00-00-00-00-07-28-4B-4A-33-82-04-00	1	1	-65dBm	
2023-12-12 08:37:37	» 08-28-48-CE-65-4A-71-D7-65-66-51-D4-40-E0-04-00	1	1	-88dBm	

Select 'Status' from the left navigation bar to view the RFID's real-time alarm status; each alarm record is displayed in the device list in data form. Only 10 entries of real-time data are temporarily stored, and excess data will overflow the older data. You can see the corresponding alarm time, response RSSI value, alarm antenna channel, and EPC data from the status bar.

5、 Alarm Log



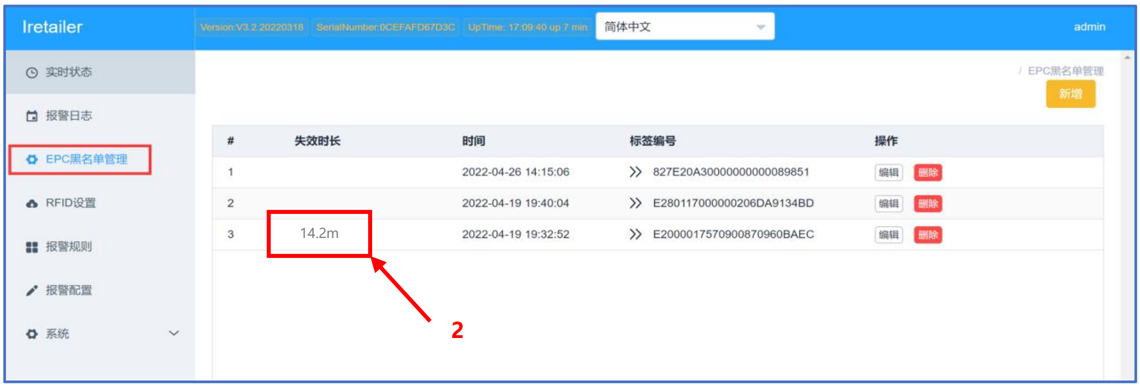
Datetime	EPC	RuleNo.	Ant	RSSI	Direction
2023-12-12 15:10:30	» 08-00-00-00-00-00-00-00-07-28-4B-4A-33-82-04-00	1	1	-63dBm	
2023-12-12 15:10:26	» 08-00-00-00-00-00-00-00-07-28-4B-4A-33-82-04-00	1	1	-65dBm	
2023-12-12 15:10:13	» AA-A8-C3-CF-C4-0E-4B-3D-B5-AA-78-C4-BD-E4-77-15	1	1	-81dBm	
2023-12-12 15:10:12	» 08-00-00-00-00-00-00-00-07-28-4B-4A-33-82-04-00	1	1	-63dBm	
2023-12-12 15:09:02	» AA-A8-C3-CF-C4-0E-4B-3D-B5-AA-78-C4-BD-E4-77-15	1	1	-80dBm	
2023-12-12 15:09:02	» 08-00-00-00-00-00-00-00-07-28-4B-4A-33-82-04-00	1	1	-65dBm	
2023-12-12 08:37:37	» 08-28-48-CE-65-4A-71-D7-65-66-51-D4-40-E0-04-00	1	1	-88dBm	

Select 'Alarm Log' from the left navigation bar to view the RFID anti-theft device's historical alarms. From the log, you can see the corresponding:
5.1, Alarm Time.
5.2, Tag EPC Number.
5.3, Alarm Rule Number.
5.4, Antenna Location.
5.5, Tag Response RSSI Value at the Time of Alarm.
5.6, Tag's Direction of Entry or Exit.
The history records store 500 entries of information. After exceeding 500, the older data will be overwritten. The history is cleared after a power outage.

6、 Filtering Status

The filtering status refers to the current state of tags that are being managed by the filtering rules in the RFID system. This feature helps to manage and control how certain tags are treated by the system, particularly those that might cause false alarms or need special handling, such as entering a whitelist after being detected multiple times.
The filtering status can indicate whether a tag is currently being filtered, if it has been added to a blacklist, or if it is in a transitional state where it may be allowed back into the normal detection process. This status is crucial for managing tags that are close to the RFID reader or that have specific behavior patterns requiring different handling to prevent unnecessary alarms.
You can check the filtering status and make adjustments through the relevant settings in the system's management interface.

6.1、EPC Blacklist Display



#	失效时长	时间	标签编号	操作
1		2022-04-26 14:15:06	827E20A30000000000089851	编辑 删除
2		2022-04-19 19:40:04	E280117000000206DA9134BD	编辑 删除
3	14.2m	2022-04-19 19:32:52	E2000017570900870960BAEC	编辑 删除

A blacklist refers to certain tags that have been read by the detection antenna but are not supposed to trigger an alarm in actual scenarios. The device maintains a special blacklist; any EPC numbers included in this list will not trigger an alarm, even if they are detected by the antenna.

To view the specific EPC numbers in the blacklist database, select "EPC Blacklist Management" from the left-hand navigation bar.

6.2、EPC 黑名单入围条件

6.2.1、Automatic Inclusion

EPC numbers with an "Expiration Duration" record are automatically included in the blacklist. In section 7.3.1, you can set the conditions for automatic inclusion. Here, you can also view the time that has already expired. The displayed time aligns with the blacklist activation time defined in the display filtering settings.

6.2.2、Manual Inclusion

If certain EPCs trigger intermittent, irregular alarms that don't meet the conditions for automatic inclusion, and the specific EPC tag cannot be located in the actual environment, you may need to forcefully include it in the blacklist. Click "Add" to manually input the EPC that needs to be added to the blacklist. Click "Edit" to adjust and set the specific data for the EPC.

6.3、EPC Blacklist Removal

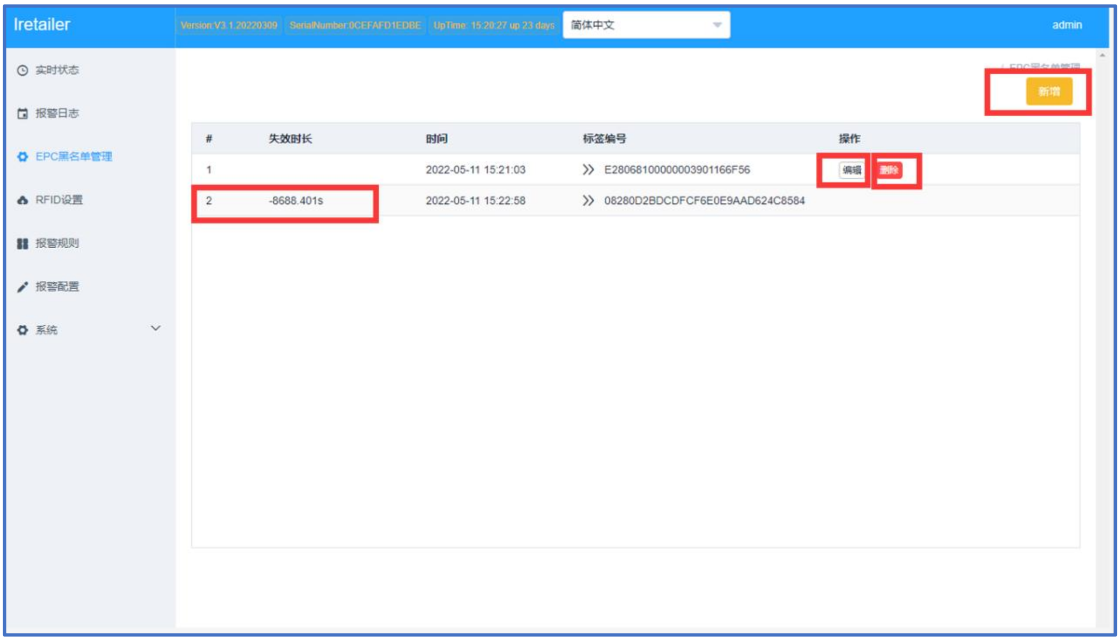
6.3.1、Automatic Removal

In section 7.3.2, you can set the expiration duration for removing an EPC from the blacklist. If the set time is exceeded, the record will be automatically deleted from the table. The "Expiration Duration" indicates the remaining active time for the blacklist entry. A negative value shows the time since the EPC was released after being idle for a long period. If you refresh the page, this data will be automatically cleared.

6.3.2、Manual Removal

To manually control the EPC blacklist for the RFID anti-theft device, select "EPC Blacklist Management" from the left-hand navigation bar. Click "Delete" to remove

EPC data from the blacklist.

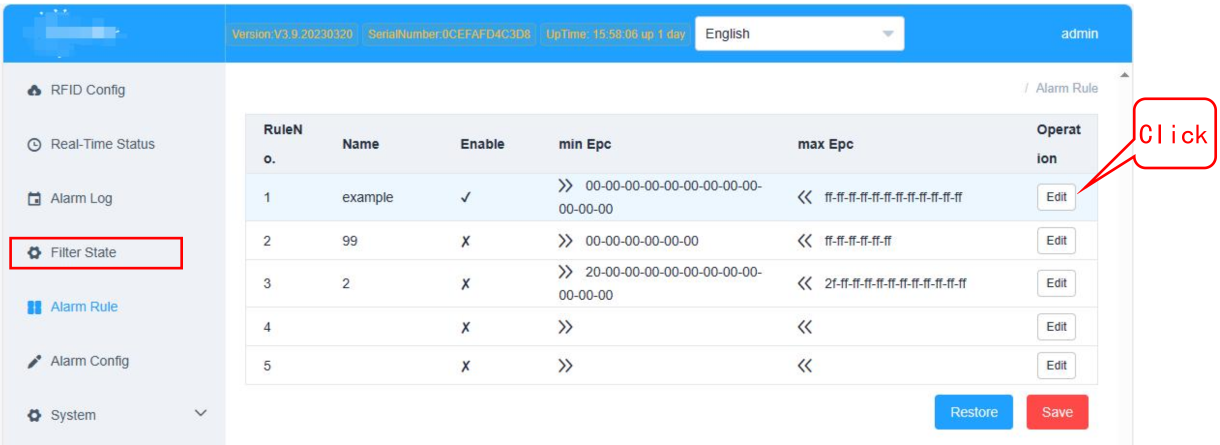


#	失效时长	时间	标签编号	操作
1		2022-05-11 15:21:03	» E28068100000003901166F56	编辑 删除
2	-8688.401s	2022-05-11 15:22:58	» 08280D2BDCDFCF6E0E9AAD624C8584	

Click "Delete" to remove EPC data from the blacklist.

7、 Alarm Rule Configuration

Select "Alarm Rules" from the left-hand navigation bar and then click "Edit" to define the rule strategies for tags.



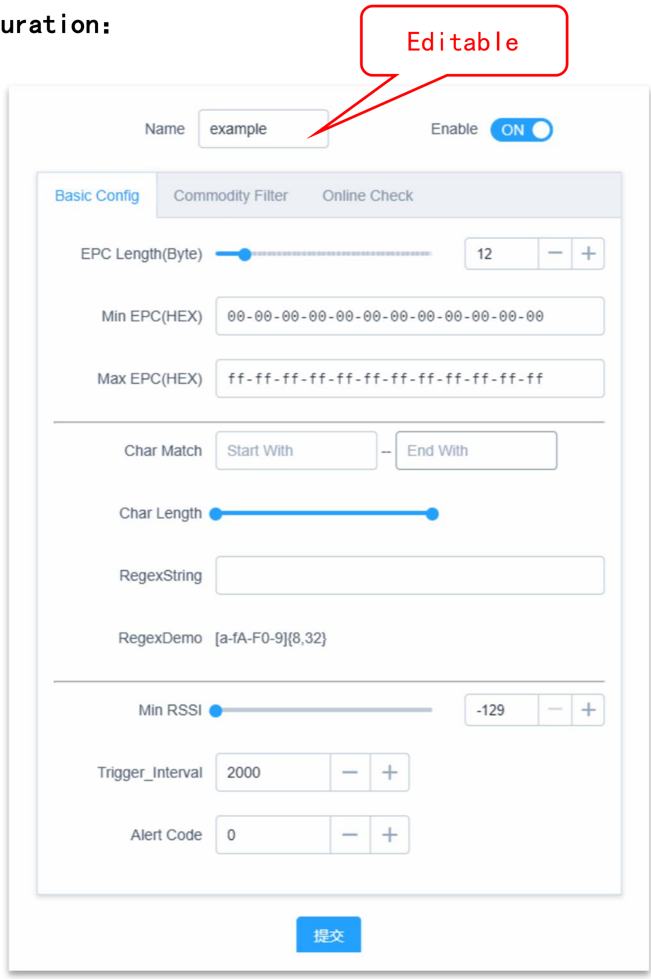
RuleNo.	Name	Enable	min Epc	max Epc	Operation
1	example	✓	» 00-00-00-00-00-00-00-00-00-00-00-00	« ff-ff-ff-ff-ff-ff-ff-ff-ff-ff-ff-ff	Edit
2	99	✗	» 00-00-00-00-00-00	« ff-ff-ff-ff-ff-ff	Edit
3	2	✗	» 20-00-00-00-00-00-00-00-00-00-00-00	« 2f-ff-ff-ff-ff-ff-ff-ff-ff-ff-ff-ff	Edit
4		✗	»	«	Edit
5		✗	»	«	Edit

In the rule settings, you can configure up to five different strategies, each of which can be implemented individually and can have its enabled/disabled status controlled. Here, you can set detection rules for different tags using the RFID anti-theft system.

Click [Edit] to define the rules.

Note: After submitting all the configured rules, you must click [Save] on this page; otherwise, the submission will be invalid.

7.1、Basic Configuration:



Editable

Name: example

Enable: ON

EPC Length(Byte): 12

Min EPC(HEX): 00-00-00-00-00-00-00-00-00-00-00-00

Max EPC(HEX): ff-ff-ff-ff-ff-ff-ff-ff-ff-ff-ff-ff

Char Match: Start With – End With

Char Length

RegexString

RegexDemo: [a-fA-F0-9]{8,32}

Min RSSI: -129

Trigger_Interval: 2000

Alert Code: 0

7.1.1、Regular Expression

You can configure EPC codes of different lengths using this setting. The global regular expression reference is: [a-fA-F0-9]{8,32}. When the regular expression is active, the maximum and minimum EPC length settings, along with their corresponding information, become invalid.

The factory default for the regular expression is blank (empty).

7.1.2、EPC Length

This setting controls the EPC length, range, RSSI response value, and trigger interval for tag detection. The EPC detection length can be set between 8 to 32 characters, with each character represented in hexadecimal format (HEX) from 0 to F.

7.1.3、Minimum EPC Setting

After setting the corresponding range, the device will only trigger an alarm for tags within that specified range. Tags outside of this range will be directly ignored. If you need to specify the EPC length and content for detection, you must clear the regular expression. The default regular expression is configured to recognize EPCs from 0 to F in both uppercase and lowercase.

7.1.5、Minimum Response RISS：

This value represents the threshold for alarm tags. For a tag to trigger an alarm, it must exceed the set threshold. The default value is -129 dBm.

7.1.5、Maximum Response RISS：

This value represents the threshold for alarm tags. If an alarm tag exceeds the set threshold, it will be forcibly filtered out. The default value is 0 dBm. This feature is used for single-antenna positioning to distinguish between near and far tags.

7.1.6、Trigger Time：

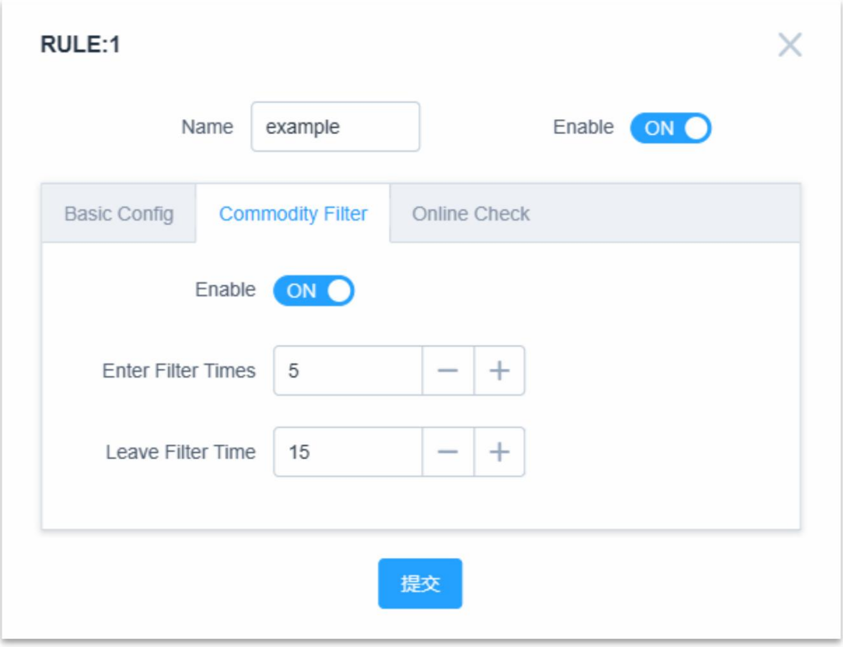
This functions like a continuous timer that reads and aggregates data at set intervals. Within this period, tags that are read multiple times are counted as a single read, which helps reduce the storage load on the backend server.
For use as an anti-theft alarm reader, the trigger time for reading can be set to a range of 1000 to 2000 milliseconds.

7.1.7、Alarm Rule Number：

The backend provides "online verification," where a specific code is issued, such as:
1001 for unsold items
1002 for self-checkout (scanned purchase) items
1003 for sold items
The code can be customized to any length (e.g., 0, 1, 61003, etc.). After setting the code, it must match the "Alert Code" defined in the Alarm Configuration section. Consistency must be maintained; otherwise, the alarm code command will not be executed.
The factory default for the rule number is set to 0.

7.3 Display Filtering：

This feature is used for items located close to the RFID reader that are easily detected, which can cause false detections. By enabling the display filtering feature, you can control the RFID anti-theft system so that after a tag is detected multiple times, it enters a whitelist. Once in the whitelist, the tag will no longer trigger an alarm. However, after the item leaves the detection area and a certain time has passed, the tag will revert to a normal status and can once again trigger an alarm if detected by the RFID system.
If the tag is detected again within the set filtering time before leaving the detection area, the time will be reset, and the tag will re-enter the filtering process.



RULE:1

Name: example Enable: ON

Enable: ON

Enter Filter Times: 5

Leave Filter Time: 15

7. 3. 1、【Number of Filter Entries】

Set the number of times a tag triggers an alarm; if the tag exceeds this number, it will automatically be added to the blacklist. The default setting for this feature is enabled, with the default number set to 5 times.

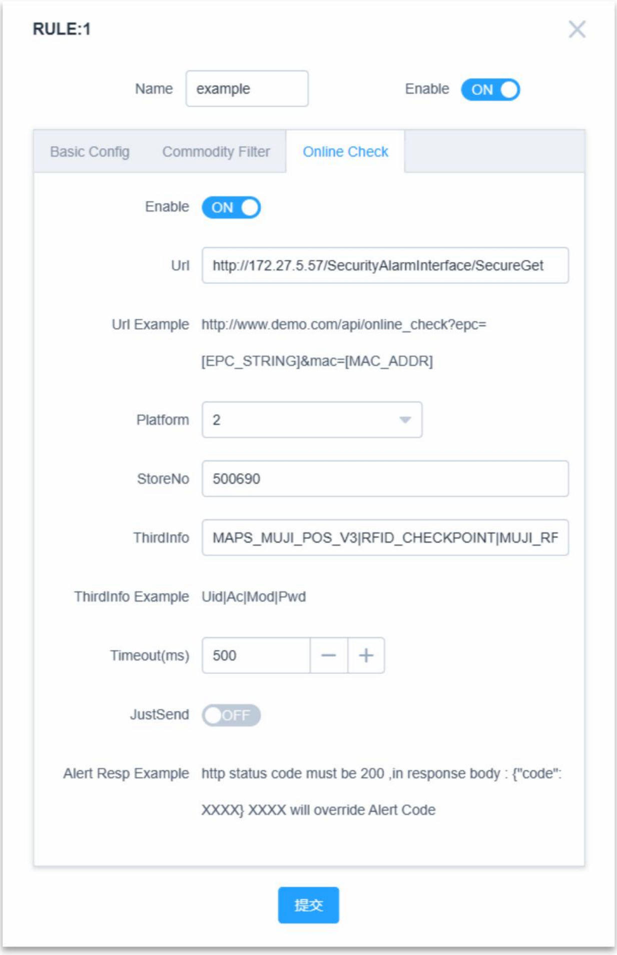
Note: During debugging and testing, this feature should be disabled to avoid affecting the test results.

7. 3. 2、【Exit Filtering Time】

Set the expiration time for tags that have been added to the blacklist. After this time has elapsed, the tag's EPC number will be released from the blacklist. The time unit is in minutes, with the default value set to 15 minutes.

During testing, you can check the specific status in section 6.3.1.

7. 7、Online Verification: (For advanced functionality use)



RULE:1

Name: example   Enable: ON

Enable: ON

Url: http://172.27.5.57/SecurityAlarmInterface/SecureGet

Url Example: http://www.demo.com/api/online_check?epc=[EPC_STRING]&mac=[MAC_ADDR]

Platform: 2

StoreNo: 500690

ThirdInfo: MAPS_MUJI_POS_V3|RFID_CHECKPOINT|MUJI_RF

ThirdInfo Example: Uid|Ac|Mod|Pwd

Timeout(ms): 500

JustSend: OFF

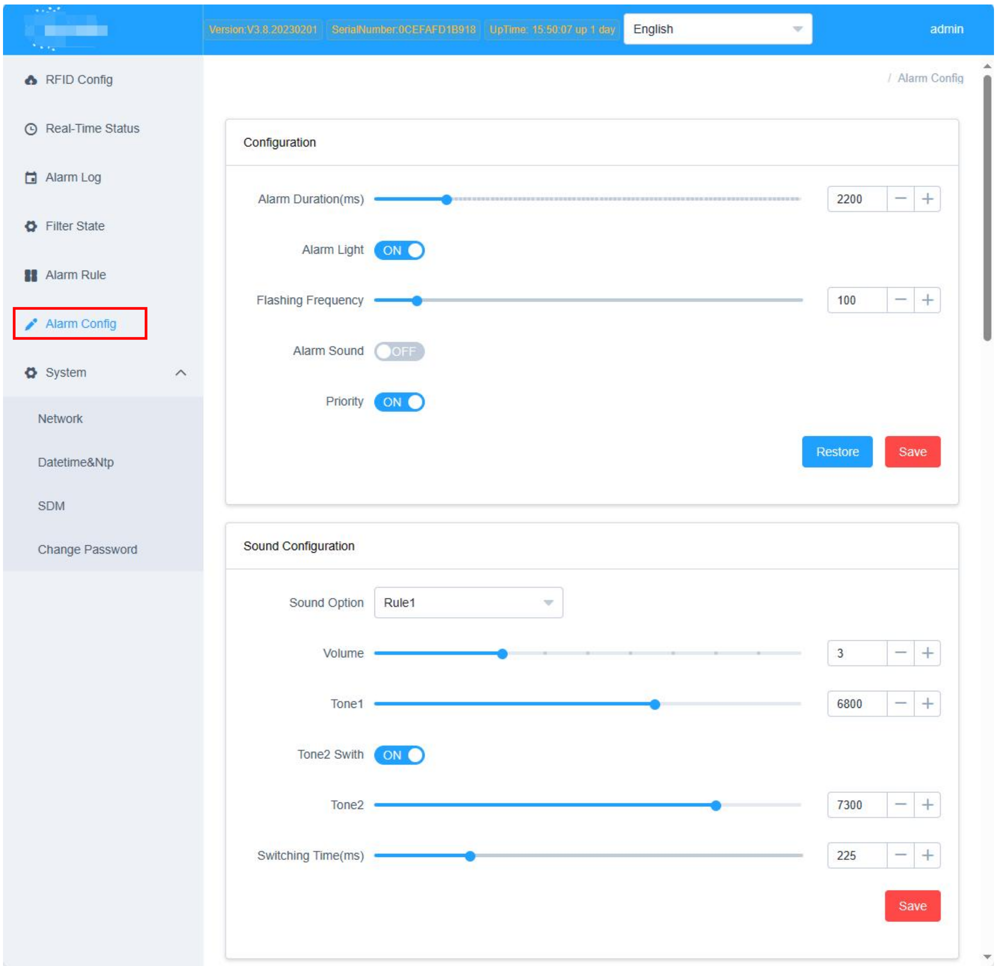
Alert Resp Example: http status code must be 200 ,in response body : {"code": XXXX} XXXX will override Alert Code

The status of EPC (Electronic Product Code) can be distributed in real-time through a data interface and the RFID software platform. The EPC status can be batch imported in EXCEL format. The EPC's outbound status can be pushed in real-time via a cash register data interface on a desktop panel, with an internal network delay of 50-100 milliseconds. The outbound status of EPC can also be altered using a desktop decoding program.

EPC numbers can be deleted in batches. When the EPC is in the "outbound" status or has been deleted from the inventory table, the anti-theft alarm will not be triggered. The above instructions pertain to EPC soft tags. If the EPC tag is a hard tag, the anti-theft alarm will sound regardless of whether the item has been purchased.

8、 Alarm Settings

Select "ALERT" from the left-hand navigation bar to control the alarm sound and alarm light of the RFID anti-theft device. The alarm light can be independently configured for different alarm colors, and the alarm sound can be set to various tones.



Configuration

Alarm Duration(ms) 2200

Alarm Light ON

Flashing Frequency 100

Alarm Sound OFF

Priority ON

Sound Configuration

Sound Option Rule1

Volume 3

Tone1 6800

Tone2 Swith ON

Tone2 7300

Switching Time(ms) 225

8.1 Parameter Configuration

8.1.2 Alarm Duration:

This setting controls the duration for all channels (rules) of the device. The minimum alarm duration is 0.6 seconds, and the maximum is 10 seconds. The adjustment interval is 0.1 seconds.

8.1.2 Control of Alarm Light Main Switch:

This controls the main switch for the alarm light.

8.1.3 Adjusting the Flashing Frequency of the Alarm Light:

Note that the flashing frequency should not be too slow. If the cycle is as long as the alarm duration, you might miss seeing the alarm light flash.

8.1.4 Control of Alarm Sound Main Switch:

This controls the main switch for the alarm sound.

8.1.5 Priority:

If priority is selected, the following rules will trigger alarms based on their priority when multiple alarms are triggered simultaneously.
Priority order: Rule 1 > Rule 2 > Rule 3 > Rule 4

8.2 Sound Configuration

8.2.1 Assigning Values to Rules 1-4 from the Dropdown Menu:

Each rule can be independently configured for alarm tone and volume.

8.2.2 Adjusting Volume Under Selected Rule Number:

Adjust the volume under the selected rule number.

8.2.3 Setting the First Tone Under Selected Rule Number, e.g., "Beep":

Configure the first tone under the selected rule number.

8.2.4 Selecting [OFF] for a Single Tone, e.g., "Beep Beep Beep":

When set to [OFF], only a single tone "Beep" will be used.

8.2.5 Selecting [ON] for a Dual Tone, e.g., "Beep Boop Beep Boop":

When set to [ON], a dual tone "Beep Boop" will be used.

8.2.6 Setting the Second Tone Under Selected Rule Number, e.g., "Boop":

Configure the second tone under the selected rule number.

8.2.7 Adjusting the Rhythm Speed Under Selected Rule Number:

The larger the value, the slower the rhythm.

8. 3 Independent Configuration of Alarm Rules for Each Rule

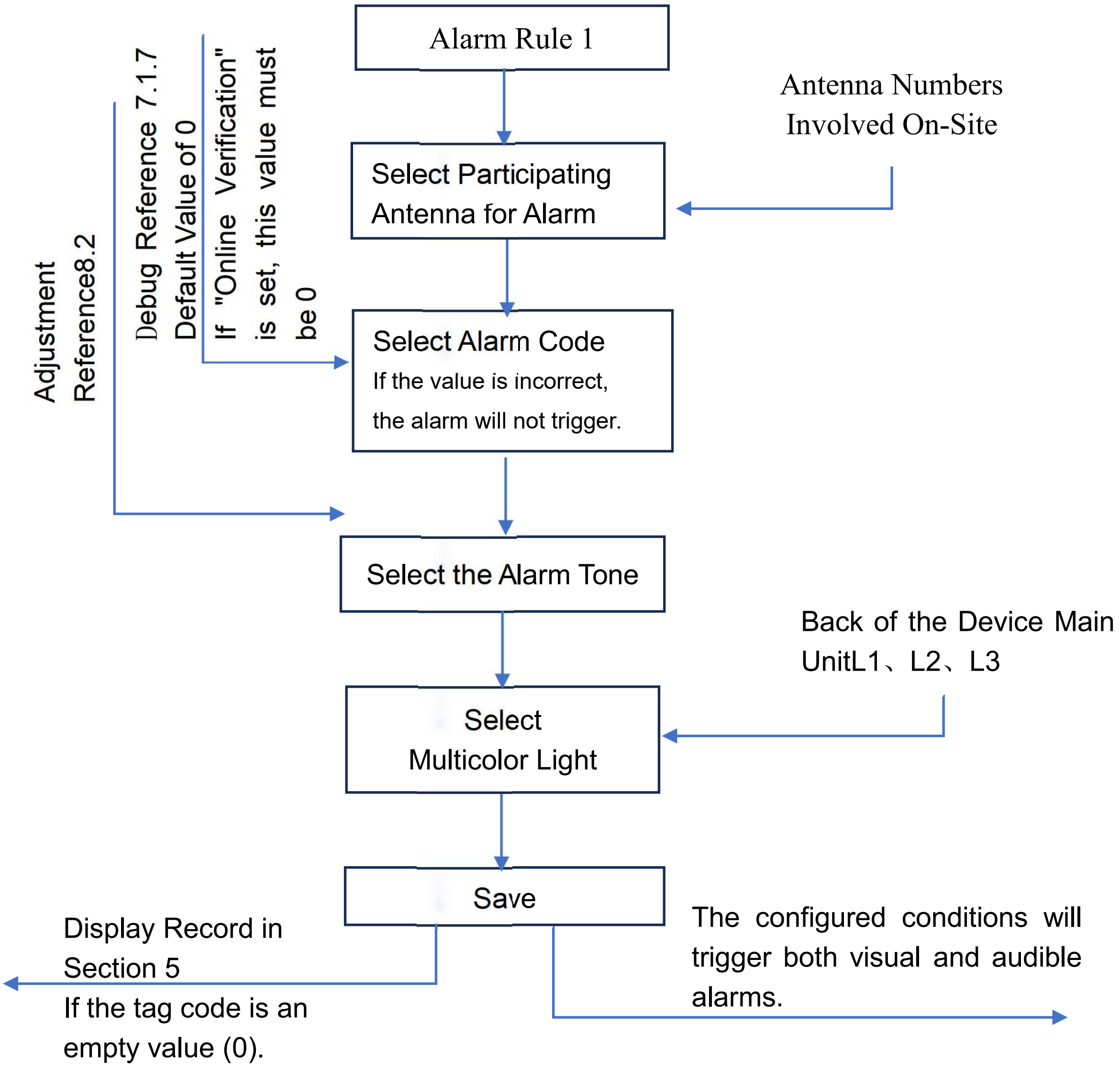
8.3.1 Setting Parameters:

Configure the parameters for each rule.

8.3.2 Setting the Rule Logic Diagram:

Define the logic diagram for each rule.

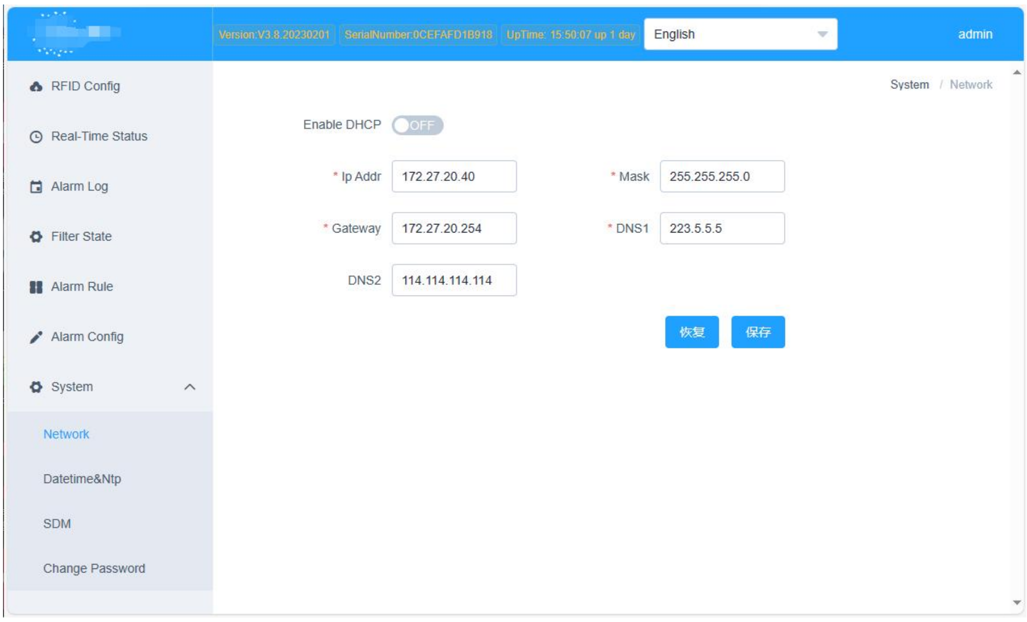
Select Participating
Antenna for Alarm


Alarm Rule 1
Antenna Numbers Involved On-Site
Select Participating Antenna for Alarm
Debug Reference 7.1.7
Default Value of 0
If "Online Verification" is set, this value must be 0
Adjustment Reference8.2
Select Alarm Code
If the value is incorrect, the alarm will not trigger.
Select the Alarm Tone
Back of the Device Main UnitL1、L2、L3
Select Multicolor Light
Save
Display Record in Section 5
If the tag code is an empty value (0).
The configured conditions will trigger both visual and audible alarms.

9、 System Settings

9.1、Network Configuration

After logging in, select "System" and then "Network" from the left-hand navigation bar.



Version:V3.8.20230201 SerialNumber:0CEFAFD1B918 UpTime: 15:50:07 up 1 day

Enable DHCP OFF

* Ip Addr 172.27.20.40

* Mask 255.255.255.0

* Gateway 172.27.20.254

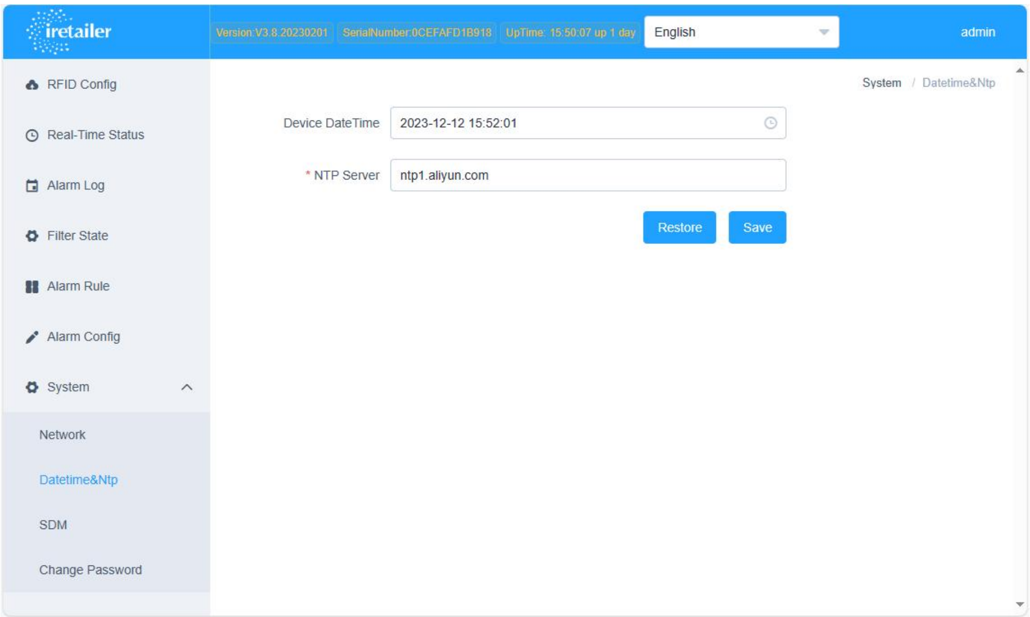
* DNS1 223.5.5.5

DNS2 114.114.114.114

By modifying the IP Address, Gateway, Mask, and DNS settings, you can configure the device for internal or external network access.

Note: It is recommended to use a subnet that can connect to the external network for future remote maintenance. Using DHCP is not recommended.;

9.2、Time Synchronization



Version:V3.8.20230201 SerialNumber:0CEFAFD1B918 UpTime: 15:50:07 up 1 day

Device DateTime 2023-12-12 15:52:01

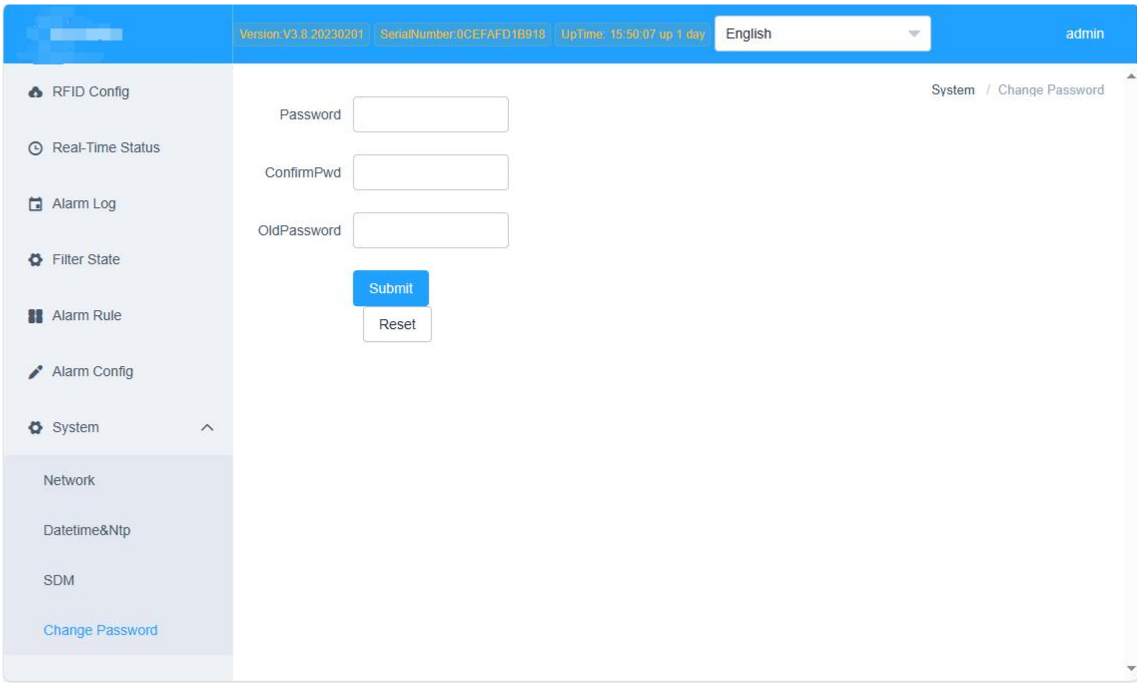
* NTP Server ntp1.aliyun.com

9.3 SDM Remote Configuration

The device can be connected to the SDM management platform, which supports up to 5,000 remote devices.

9.4 Change Password

You can modify the password for accessing the device.



Version:V3.8.20230201 SerialNumber:0CEFAFD1B918 UpTime: 15:50:07 up 1 day

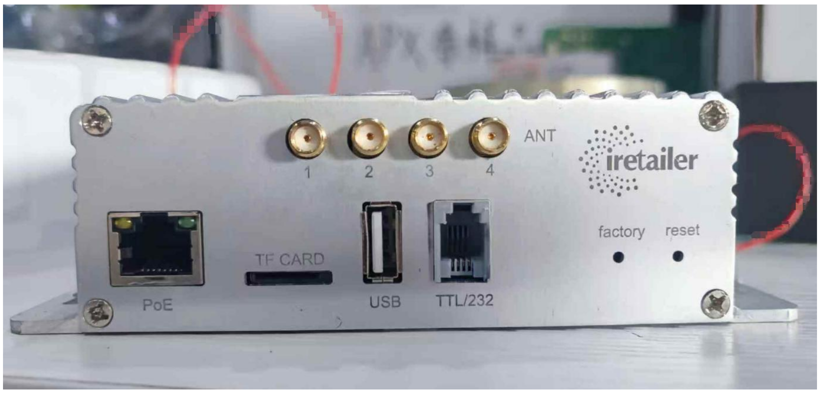
English

admin

10.1 Host Front Panel Interfaces:

10.1.1 Device Recovery to Initial Network Address:

When the device's IP address changes and it becomes inaccessible, you can reset the RFID device by performing the following operation:



For the IRD8004 ceiling-integrated machine, locate the "Reset" button on the back of the device. While the device is powered on, press and hold the button for more than 10 seconds to restore the initial IP address to 192.168.1.8.

10.1.2 PoE Connection Using RJ45 Connector

10.1.3 TF Card for Memory Expansion

10.2.6 L4 Online Verification Pre-read Indicator Light