Flashlight

User's Manual

V1.0.2

Foreword

General

This manual introduces the functions and operations of the flashlight (hereinafter referred to as "the Light").

Safety Instructions

The following signal words might appear in the manual.

Signal Words	Meaning
![DANGER]	Indicates a high potential hazard which, if not avoided, will result in death or serious injury.
![WARNING]	Indicates a medium or low potential hazard which, if not avoided, could result in slight or moderate injury.
![CAUTION]	Indicates a potential risk which, if not avoided, could result in property damage, data loss, reductions in performance, or unpredictable results.
![TIPS]	Provides methods to help you solve a problem or save time.
![NOTE]	Provides additional information as a supplement to the text.

Revision History

Version	Revision Content	Release Time
V1.0.2	Updated the manual format and cybersecurity content.	November 2021
V1.0.1	Updated the manual format.	January 2021
V1.0.0	First release.	February 2018

Privacy Protection Notice

As the device user or data controller, you might collect the personal data of others such as their face, fingerprints, and license plate number. You need to be in compliance with your local privacy protection laws and regulations to protect the legitimate rights and interests of other people by implementing measures which include but are not limited: Providing clear and visible identification to inform people of the existence of the surveillance area and provide required contact information.

About the Manual

- The manual is for reference only. Slight differences might be found between the manual and the product.
- We are not liable for losses incurred due to operating the product in ways that are not in compliance with the manual.
- The manual will be updated according to the latest laws and regulations of related jurisdictions. For detailed information, see the paper user's manual, use our CD-ROM, scan the QR code or visit our official website. The manual is for reference only. Slight differences might be found between the electronic version and the paper version.

- All designs and software are subject to change without prior written notice. Product updates might result in some differences appearing between the actual product and the manual. Please contact customer service for the latest program and supplementary documentation.
- There might be errors in the print or deviations in the description of the functions, operations and technical data. If there is any doubt or dispute, we reserve the right of final explanation.
- Upgrade the reader software or try other mainstream reader software if the manual (in PDF format) cannot be opened.
- All trademarks, registered trademarks and company names in the manual are properties of their respective owners.
- Please visit our website, contact the supplier or customer service if any problems occur while using the device.
- If there is any uncertainty or controversy, we reserve the right of final explanation.

Important Safeguards and Warnings

This section introduces content covering the proper handling of the device, hazard prevention, and prevention of property damage. Read carefully before using the device, comply with the guidelines when using it, and keep the manual safe for future reference.

Transportation Requirements

⚠

- Pack the device with packaging provided by its manufacturer or packaging of the same quality before transporting it.
- Transport the device under allowed humidity and temperature conditions.

Storage Requirements

⚠

Store the device under allowed humidity and temperature conditions.

Installation Requirements

⚠ WARNING

- Do not connect the power adapter to the device while the adapter is powered on.
- Strictly comply with the local electric safety code and standards. Make sure the ambient voltage is stable and meets the power supply requirements of the device.
- Do not connect the device to two or more kinds of power supplies, to avoid damage to the device.
- When handling or installing the device, do not pull the power cord of the waterproof connector to prevent the connector from becoming loose.
- Use the accessories suggested by the manufacturer. Installation and maintenance must be performed by qualified professionals.
- A large surge of current will be generated when the device flashes. Use separate power cord and 20 Ah air switch for it.

⚠

- Personnel working at heights must take all necessary measures to ensure personal safety including wearing a helmet and safety belts.
- Do not place the device in a place exposed to sunlight or near heat sources.
- Keep the device away from dampness, dust, and soot.
- Put the device in a well-ventilated place, and do not block its ventilation.
- Use an adapter or cabinet power supply provided by the manufacturer.
- The power supply must conform to the requirements of ES1 in IEC 62368-1 standard and be no higher than PS2. Please note that the power supply requirements are subject to the device label.
- The device is a class I electrical appliance. Make sure that the power supply of the device is connected to a power socket with protective earthing.
- An emergency disconnect device must be installed during installation and wiring at a readily accessible location for emergency power cut-off.

● Prevent water from flowing into the device and causing damage during on-site installation.

Operation Requirements

⚠️ WARNING

● Avoid violent collisions.
● Do not constantly use flash for the device while testing it to avoid the risk of the device overheating or becoming damaged.
● If an abnormality in the operation of the device occurs, immediately cut off the power supply, and then identify and resolve the issue before attempting to use the device again.
● Do not replace the special screws with other screws. If the replacement screws are too long, then the internal components might become damaged.
● High voltage inside the device. Do not disassemble the device without a qualified professional present to avoid the risk of being exposed to danger.

⚠️

● Make sure that the power supply is correct before use.
● Do not unplug the power cord on the side of the device while the adapter is powered on.
● Operate the device within the rated range of power input and output.
● Use the device under allowed humidity and temperature conditions.
● Do not drop or splash liquid onto the device, and make sure that there is no object filled with liquid on the device to prevent liquid from flowing into it.
● Do not vibrate, squeeze or immerse the device in liquid during transportation, storage or installation.
● Protect the line cord and wires from being walked on or squeezed particularly at plugs, power sockets, and the point where they exit from the device.
● We recommend you use the device with a lightning protection device for stronger protection against lightning. For outdoor scenarios, strictly comply with the lightning protection regulations.
● Ground the function earthing portion of the device to improve its reliability. The device is a class I electrical appliance. Make sure that the power supply of the device is connected to a power socket with protective earthing.

Maintenance Requirements

⚠️

Use the accessories suggested by the manufacturer. Installation and maintenance must be performed by qualified professionals.

Table of Contents

1 Product Information

1.1 Overview

The flashlight is an auxiliary light source of high-performance intelligent traffic field supporting synchronous snapshot and light, promoting the modernization of roads and urban traffic management. This product is suitable for over speed snapshot, ANPR, e-police system, such as night plate, vehicle model, face fill light.

It adopts intelligent control technology, fast call back, and in low illumination environment, flashlight life is 10 million times. Flash duration is short each time, and snapshot is clear, and flashlight is adjustable. Structure has thermal insulation design to improve flashlight life, and you can automatically switch low-brightness mode by photosensitive detector.

The overall appearance of simple, economical and practical, with excellent structure and cooling, better guarantee the product's thermal diffusivity, stability and security.

1.2 Features

- Accurate and stable power control, advanced power stabilization technology.
- Good snapshot effect: flashlight trigger and snapshot host exposure signal output connected, via exposure signal control flashlight's instant highlight to fill light for picture snapshot.
- RS485 communication function, connecting flashlight client, setting flashlight internal parameter, adjusting brightness, support serial upgrade.
- Call back time within 60ms to meet market demand of continuous snapshot.
- Switch trigger, short connect once to adjust if it flashes.
- Pulse width detection trigger, by detecting pulse signal of fixed length, filtering interference signal on rod piece to guarantee normal operation of device, and to improve device reliability.
- Photosensitive detector, auto switch brightness.
- Switch control switch brightness.
- Statistics function, including sharp flash count and trigger count, allow site quickly position signal interference.
- Shielding, to shield miss-trigger interference signal, when external trigger times exceeds miss-detection threshold value (default value 3, as allowing 3 times of flash within 500ms, 4 times of flash within 1s, 8 times of flash within 3s), and then flashlight enters protection status, until interference signal is cleared for over 10s, it will respond to next signal triggered.
- Streamline design, neat, high saturation.
- Under zero-light environment, the camera can snapshot clear plate, vehicle model and face in vehicle.
- Good waterproof, anti-dust.
- Internal cooling design to prevent damage cause by high temperature.

2 Dimension

Figure 2-1 Dimensions (mm [inch])

ø251.6[9.91]

156.8[6.17]

158.9[6.26]

358.5[14.11]

170.8[6.72]
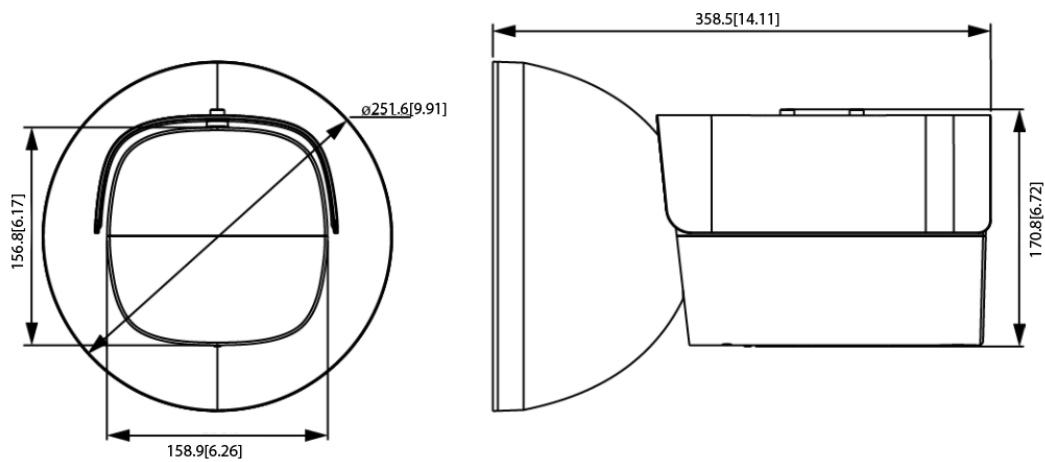
3 Wiring

3.1 Device Wiring

Step 1   Each of the inner core and the outer epidermal joint are supposed to be insulated and under water-proof dressing according specifications.

Step 2   Inner core of the exposed part is supposed to be dressed under insulating tape and then dressed under waterproof insulating tape.

Step 3   All cables are dressed under waterproof insulating tape according to specifications.

Step 4   Put cable into wiring installation tube.

Step 5   There must be a hole below the joint in the casing to prevent ponding.
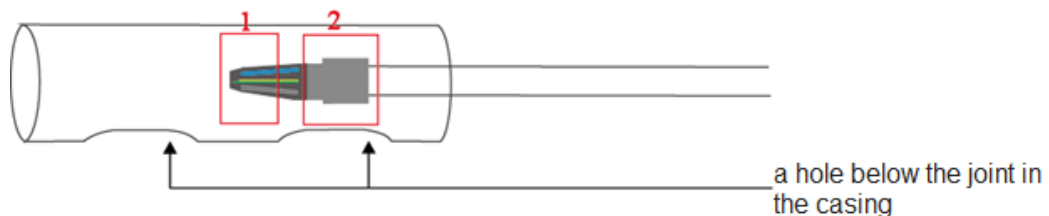
Figure 3-1 Device wiring

a hole below the joint in the casing

Table 3-1 Wiring description

No.	Note
1	Joint of inner core of the exposed part.
2	Joint of inner core and outer insulation surface.

- Open the hole according to actual condition of installation tube.
- If the cable does not have well water-proof function, and water enters the light body, the device might be damaged.

3.2 Power Signal Line

- Wiring must be correct, be careful to distinguish power line and trigger signal line. Signal line is weak electric line and power line inputs 220 V, so please DO NOT mistakenly mix them.
- Yellow-green line connects GND, the line must connect GND, to improve the reliability of device. Otherwise its lightening arrester will not be valid.

The flashlight has 8-pin power line: with pin colors of blue, yellow-green, brown, red, white and black.

Cable wiring of different models may vary, please subject to actual product.
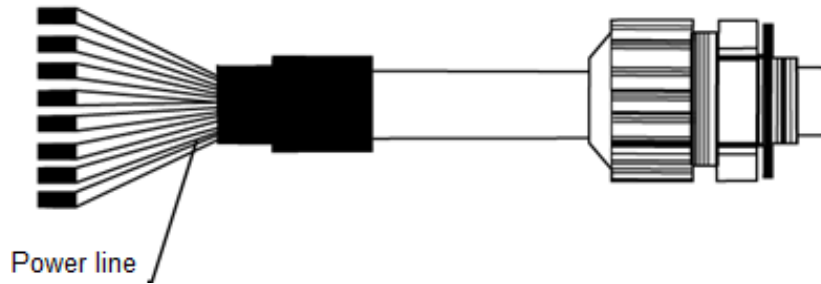
Figure 3-2 Cable wiring

Power line

Table 3-2 Cable wiring description

| Name	Description
Signal Line	• Blue line connects 220 VAC zero N. • Yellow-green line connects GND. • Brown connects 220 VAC firing line L. • Green: sharp flash trigger signal EX+. • Grey: sharp flash trigger signal EX-. • White: RS485_B. • Red: RS485_A. • Black: GND.

3.3 Flashlight Connects Camera Wiring

Lower part of flashlight has one power supply and signal wiring interface, which will ensure leak-proof.

Flashlight connects camera figure here is for reference only, please subject to actual product.

Figure 3-3 Camera wring

Sharp flash trigger EX

220V AC
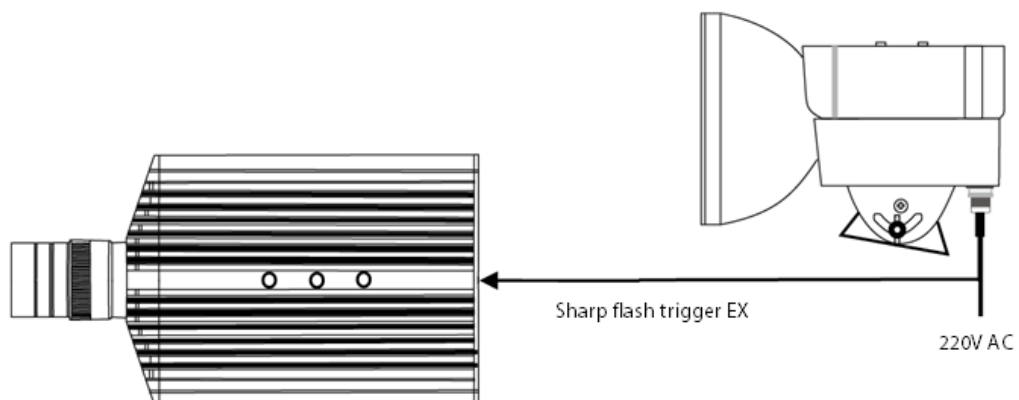
Flashlight sharp flash trigger cable EX+ (green), EX-(grey) connect to camera sharp flash interface F+, F-.

A camera usually has more than one sharp flash interface, please subject to actual product.
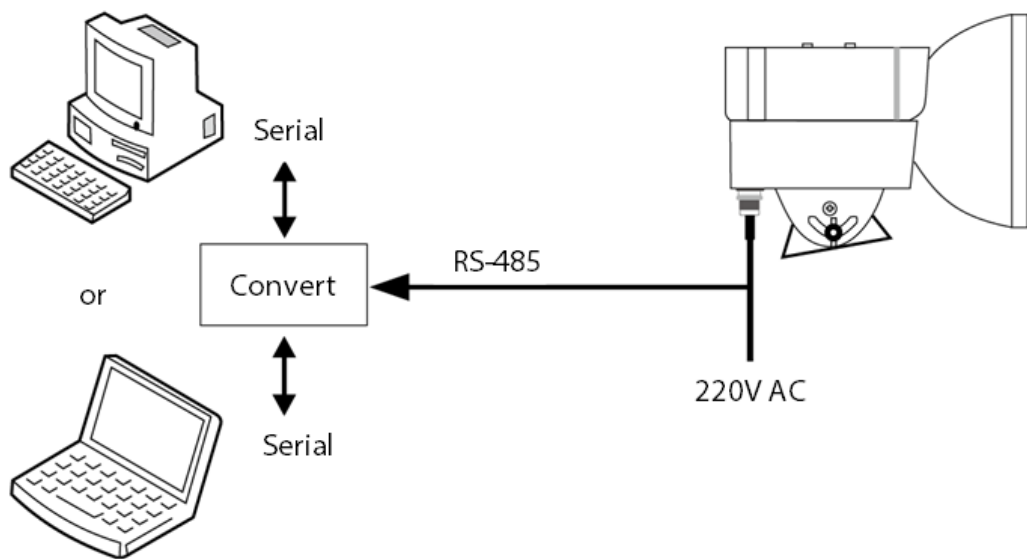
3.4 RS485 Wiring

This port has three functions:

- Via PC client, set LED flashlight internal parameter.
- Via PC self-carried serial tool, upgrade flashlight.
- Communicate with camera via serial.

Connection of flashlight can switch from PC serial to RS-485 interface.

Figure 3-4 RS-485 wiring

Flashlight connects to 220 VAC, via RS-485 connects to PC.

3.5 Device Installation

After flashlight powers up, you need wait about 3 seconds, then you can touch flashlight to trigger signal line and view flashlight status.

Step 1   Equip flashlight with bracket and install on pole.

Step 2   Connect the installed flashlight to power (be careful with grounding).

Step 3   Connect flash trigger signal line to camera or its component.

Step 4   Adjust and rotate light body to meet actual needs.

When the flashlight is at normal working status, it can flash for camera.

4 Camera Configuration

Here you can set port number, work mode, delay time and more.

Step 1   In camera WEB page, select **Setup** > **Camera** > **General** > **Light Config**.

The page is for reference only, and might differ from the actual model.

Figure 4-1 Light configuration page

Step 2   Configure light parameters.

Table 4-1 Parameters description

Parameter		Description
Port		Select light type of each port, flash lamp or frequency lamp.
Flashlight	Work mode	• **No**: Flashlight OFF. • **Always**: Flashlight always ON. • **Auto**: Set brightness preset value. When illumination is below preset value, the flashlight automatically turns on.
	Pulse width	Set flashlight pulse width value, used to detect flashlight pulse width.
	Delay time	Set flashlight delay time, to guarantee sync of snapshot and flashlight. Delay time is set to -150 μs，not camera snapshot is the best. If default parameter is 0, then snapshot will be relatively dark.
	Burst mode	Flashlight trigger level, as high level and low level. Currently only support low level.

Step 3   Click **OK**.

5 Client ConfigTool

Flashlight config tool can configure brightness, environment threshold level, view program version and feedback.

📖

- When you are using the client, on RS485 BUS, except 232-485 convertors on PC and flashlight, all devices with RS485 ports cannot in sending status, otherwise communication will be abnormal.
- Once abnormality occurs, we recommend you to cut other 485 devices except 232-485 convertors on PC and flashlight to guarantee normal communication.
- Client config tool has one-click installation.
- All parameters are empty when you open the client for the first time.
- Program will update periodically, without notification.
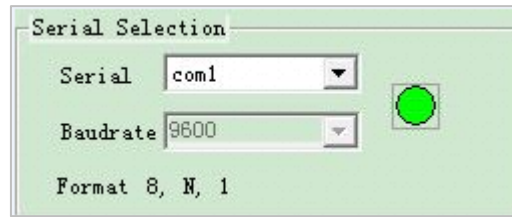
Double click 😃 to enter config tool.

Figure 5-1 Config tool

5.1 Serial Selection

Step 1   View serial selection.

Figure 5-2 Serial selection

Step 2   Click ▼, and select serial accordingly.

After you open the software, please confirm if serial is open successfully.

● If serial does not exist or is occupied, serial status indicator will show black. Please close serial currently open or try to open new serial.

● If you successfully open new serial, indicator will be green.

📖

● If you see abnormal pop up during this operation, please follow instructions to set again.

● Serial baud rate is 9600 bps and not changeable. Format is 8-digit, no parity, 1 stop bit (fixed value, no need to set).

5.2 Product Selection

Select corresponding product of device, here the product is flash light.

Figure 5-3 Product selection

5.3 False Threshold

Set false threshold, when flashlight times exceed the defined threshold, device will automatically stop for 10s. Max threshold level is 8.

Set threshold level to 3, set flash rule to flash 3 times in 500 ms, 4 times in 1 s, 8 times in 3 s.

If exceeding any of the above rules, flashlight will stop at 10 s.

📖

As threshold level increases by 1, set flash rule will increase by 1. For example, set threshold level to 4, set rules are: 500 ms flash 4 times, 1 s flash 5 times, 3 s flash 9 times. If any of these rules is met, flashlight will stop flash for 10s.

Figure 5-4 False threshold

- Read threshold: Read set threshold.
- Write threshold: Write set threshold into device.

5.4 Set Brightness

Set flashlight brightness as needed for day, night and all-day time. There are 1-16 levels available.

📖

Day has higher brightness while night has lower brightness. The higher the level, the brighter the flash will be.

Figure 5-5 Brightness

You can increase brightness by clicking + and decrease brightness by clicking - .

5.5 Photosensitive Threshold

Photosensitive level includes 1-6.
- Level 1 is the highest illumination and level 6 is the lowest. Default level is 3.
- System auto switch flashlight threshold to enter day or night mode.
- Level 6 means it will switch to day or night mode only when illumination is low in the environment and vice versa for level 1.

Current is in day mode, and set threshold to level 6. When 20:00 is reached and environment illumination is very low, flashlight switches to night mode.

Figure 5-6 Threshold level

5.6 Feedback

When you select serial, read/write, there will be corresponding instructions of operation or result.

5.7 Configuring Parameter

Write configured flashlight parameter into controller of flashlight, or read out parameter in flashlight config, to be shown in config tool.

Table 5-1 Flashlight parameter description

Parameter	Note
Write Config	● If successfully write, the parameter immediately become effective and you do not need to restart the light. ● In feedback area, the success/failure result will be shown.
Read Config	The system will read flashlight controller parameter and show in each config area. In feedback area, the success/failure result will be shown.
Production Model	Not used by user.
Standard Model	

Appendix 1 Cybersecurity Recommendations

Mandatory actions to be taken for basic equipment network security:

1. **Use Strong Passwords**

   Please refer to the following suggestions to set passwords:
   - The length should not be less than 8 characters.
   - Include at least two types of characters; character types include upper and lower case letters, numbers and symbols.
   - Do not contain the account name or the account name in reverse order.
   - Do not use continuous characters, such as 123, abc, etc.
   - Do not use overlapped characters, such as 111, aaa, etc.

2. **Update Firmware and Client Software in Time**
   - According to the standard procedure in Tech-industry, we recommend to keep your equipment (such as NVR, DVR, IP camera, etc.) firmware up-to-date to ensure the system is equipped with the latest security patches and fixes. When the equipment is connected to the public network, it is recommended to enable the"auto-check for updates" function to obtain timely information of firmware updates released by the manufacturer.
   - We suggest that you download and use the latest version of client software.

"Nice to have" recommendations to improve your equipment network security:

1. **Physical Protection**

   We suggest that you perform physical protection to equipment, especially storage devices. For example, place the equipment in a special computer room and cabinet, and implement well-done access control permission and key management to prevent unauthorized personnel from carrying out physical contacts such as damaging hardware, unauthorized connection of removable equipment (such as USB flash disk, serial port), etc.

2. **Change Passwords Regularly**

   We suggest that you change passwords regularly to reduce the risk of being guessed or cracked.

3. **Set and Update Passwords Reset Information Timely**

   The device supports password reset function. Please set up related information for password reset in time, including the end user's mailbox and password protection questions. If the information changes, please modify it in time. When setting password protection questions, it is suggested not to use those that can be easily guessed.

4. **Enable Account Lock**

   The account lock feature is enabled by default, and we recommend you to keep it on to guarantee the account security. If an attacker attempts to log in with the wrong password several times, the corresponding account and the source IP address will be locked.

5. **Change Default HTTP and Other Service Ports**

   We suggest you to change default HTTP and other service ports into any set of numbers between 1024–65535, reducing the risk of outsiders being able to guess which ports you are using.

6. **Enable HTTPS**

   We suggest you to enable HTTPS, so that you visit Web service through a secure communication channel.

7. **MAC Address Binding**

   We recommend you to bind the IP and MAC address of the gateway to the equipment, thus

reducing the risk of ARP spoofing.

8. **Assign Accounts and Privileges Reasonably**

   According to business and management requirements, reasonably add users and assign a minimum set of permissions to them.

9. **Disable Unnecessary Services and Choose Secure Modes**

   If not needed, it is recommended to turn off some services such as SNMP, SMTP, UPnP, etc., to reduce risks.

   If necessary, it is highly recommended that you use safe modes, including but not limited to the following services:

   - SNMP: Choose SNMP v3, and set up strong encryption passwords and authentication passwords.
   - SMTP: Choose TLS to access mailbox server.
   - FTP: Choose SFTP, and set up strong passwords.
   - AP hotspot: Choose WPA2-PSK encryption mode, and set up strong passwords.

10. **Audio and Video Encrypted Transmission**

    If your audio and video data contents are very important or sensitive, we recommend that you use encrypted transmission function, to reduce the risk of audio and video data being stolen during transmission.

    Reminder: encrypted transmission will cause some loss in transmission efficiency.

11. **Secure Auditing**

    - Check online users: we suggest that you check online users regularly to see if the device is logged in without authorization.
    - Check equipment log: By viewing the logs, you can know the IP addresses that were used to log in to your devices and their key operations.

12. **Network Log**

    Due to the limited storage capacity of the equipment, the stored log is limited. If you need to save the log for a long time, it is recommended that you enable the network log function to ensure that the critical logs are synchronized to the network log server for tracing.

13. **Construct a Safe Network Environment**

    In order to better ensure the safety of equipment and reduce potential cyber risks, we recommend:

    - Disable the port mapping function of the router to avoid direct access to the intranet devices from external network.
    - The network should be partitioned and isolated according to the actual network needs. If there are no communication requirements between two sub networks, it is suggested to use VLAN, network GAP and other technologies to partition the network, so as to achieve the network isolation effect.
    - Establish the 802.1x access authentication system to reduce the risk of unauthorized access to private networks.
    - Enable IP/MAC address filtering function to limit the range of hosts allowed to access the device.