Carbon Monoxide Alarm

User's Manual

Foreword

General

This manual introduces the functions and operations of the Carbon Monoxide Alarm (hereinafter referred to as "the Device").

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
V1.0.0	First release.	December 2021

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.

Content

1 About Carbon Monoxide

How does carbon monoxide affect me?

Carbon Monoxide is an odorless, tasteless, highly toxic and flammable gas caused by incomplete combustion of carbon-containing fuels. Prolonged exposure to carbon monoxide rich atmospheres leads to serious tissue damage or even death.

What are some symptoms of carbon monoxide poisoning?

When carbon monoxide accumulates to dangerous level, there are following signs and symptoms.
- Mild exposure: Slight headache, nausea, vomiting, fatigue (often described as 'flu-like' symptoms).
- Medium exposure: Severe throbbing headache, drowsiness, confusion, fast heart rate.
- Extreme exposure: Unconsciousness, convulsions, cardiorespiratory failure, death.

Where does carbon monoxide come from?

- Your furnace, water heater, stove, space heaters, fireplace, woodstove, charcoal grill, and dryer can be sources of CO, especially if they are not in good working condition or have been installed without proper ventilation.
- Vehicle exhaust fumes from attached garages also can become CO hazards.
- Using kerosene heaters or charcoal grills indoors, or running a car in a garage can cause CO levels to raise high enough to result in death or serious illness.

How do I know if carbon monoxide is present?

Poisoning is measured in a range called parts per million (ppm). This Carbon Monoxide Alarm monitors and displays this level in the surrounding atmosphere. When levels of carbon monoxide reach 150 ppm, people can become disoriented and collapse.

If your CO Alarm suspects CO poisoning, get outside to fresh air immediately, and then call the local emergency department.

How do I protect myself and my family from carbon monoxide poisoning?

- Install a battery-operated carbon monoxide detector in your home.
- Have your home's heating system, water heater, and other gas, oil, or coal-burning appliances serviced each year.
- Keep your fuel-burning appliances and engines properly vented.
- Have your chimney checked and cleaned each year.
- Have a mechanic check your car or truck's exhaust system for leaks each year.
- Use gas appliances as recommended. Never use a gas range or oven for heating indoor spaces.

What to do during carbon monoxide alarm?

When the indoor CO concentration reaches the potentially lethal levels, the carbon monoxide alarm sends out alarm signal. Please carefully review the following guidance to take proper action in the event of an alarm.

● Keep calm and ventilate the property by opening doors and windows.
● Get outside to fresh air immediately and call the local emergency department as soon as possible.
● Don't re-enter the property until the alarm has stopped and the leakage source is handled by an expert.

2 Important Safeguards and Warnings

This manual will help you to use the Device properly. Read the manual carefully before using the Device, and keep it well for future reference.

Operation Requirements

⚠️ **WARNING**

Never ignore any alarm. Failure to respond may lead to serious injury or death.

⚠️ **CAUTION**

- Make sure that the power supply of the device works properly before use.
- Use the device according to the operating environment.
- Only use the device within the rated power range.
- Transport, use and store the device under allowed humidity and temperature conditions.
- Prevent liquids from splashing or dripping on the device. Make sure that there are no objects filled with liquid on top of the device to avoid liquids flowing into it.
- The CO alarm is only designed for indicating the presence of carbon monoxide; it cannot detect gas, heat or flames.
- Check the performance regularly by a qualified service engineer.

Installation Requirements

⚠️ **WARNING**

- Strictly abide by local electrical safety standards, and make sure that the voltage in the area is steady and conforms to the power requirements of the device.
- Failure to properly install and operate this device will prevent proper operation of the Device and will prevent its response to CO hazards.

⚠️ **CAUTION**

- Observe all safety procedures and wear required protective equipment provided for your use while working at heights.
- Do not expose the device to direct sunlight or heat sources.
- Keep the original packing material well because you might need it to pack the device and send it back for repair.
- Make sure the application scenario conforms to installation requirements. Contact your local retailer or customer service center if there is any problem.
- All installation and operations shall conform to your local electrical safety requirements, fire protection regulations, and other relevant regulations.
- The device must be installed by a competent person.

3 Introduction

3.1 Product information

Carbon Monoxide Alarm (hereinafter referred to as the Alarm), adopting advanced electrical technology, MCU, a built-in high-volume buzzer, this durable and attractive alarm responds quickly and becomes highly sensitive with stable performance and low false alarm. Once the surrounding CO concentration reaches the alarm value, it will promptly send out an audible and visual alarm signal to remind the user to take immediate measures. Certified to European Carbon Monoxide Alarm Standard EN 50291-1:2018. Application scenarios include residential areas such as villas, apartments and dormitories.

3.2 Product profile

No.	Name	Introduction
1	Buzzer	Alarm Sound: 85dB (A) at 3 m (9.84 ft).
2	LCD Display	Display the current CO concentration.
3	Test/Silence Button	● Verify the normal operation: Press the **Test/Silence** button, the screen will show for 3 seconds, all the indicators will flash 3 times, and the buzzer will beep 3 times. ● Stop the alarm sound: Press the **Test/Silence** button, and the Alarm will temporarily stop the alarm sound.
4	Indicator	● Standby: Green Power indicator flashes. ● Alarm: Red Alarm indicator flashes. ● Fault: Yellow Fault indicator flashes.
5	Battery Compartment	Replace the battery with CR123A model.

3.3 Dimensions

Figure 3-1 Dimensions (mm[inch])
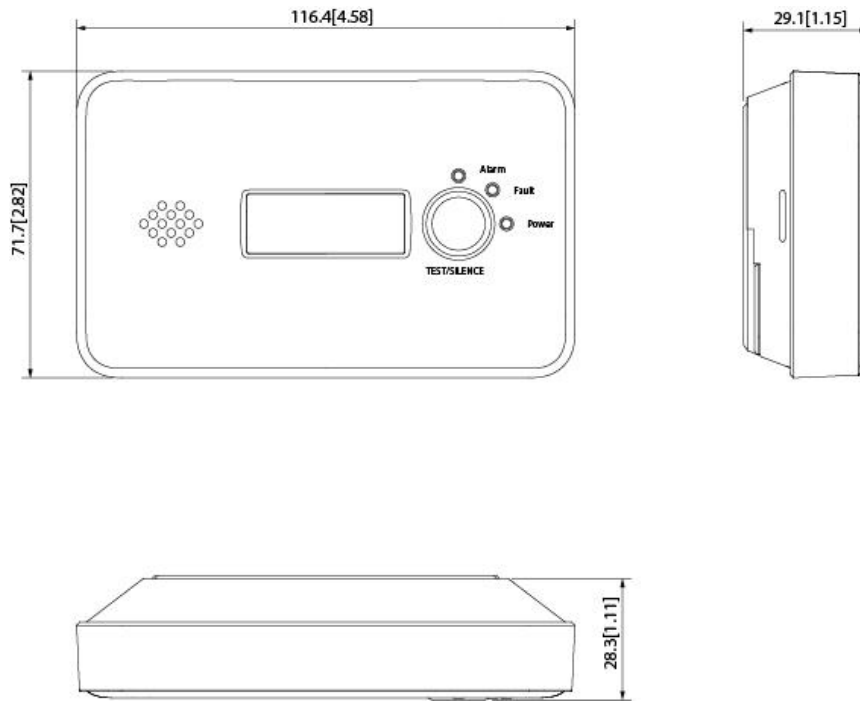
4 Technical Information

Parameter	Introduction
Model	DHI-HY-GC20B
Detection Gas	Carbon Monoxide (CO)
Alarm Sensitivity	● 50 ppm: 60 min–90 min ● 100 ppm: 10 min–40 min ● 300 ppm: < 3 min
Operating Voltage	3V DC
Monitoring Current	≤ 20uA
Alarm Current	≤ 10mA
Operating Temperature	−10℃ to +55℃ (+14℉ to +131℉)
Relative Humidity	≤ 95% RH (non condensing)
Alarm Method	Visual and audible alarm
Alarm Volume	≥ 85dB (A) @ 3 m (9.84 ft)
Silence	Support
Dimensions	116.4 mm× 71.7 mm× 28.3 mm (4.58″× 2.82″× 1.11″)
Installation	Wall mount
Indicator Light	● Red: Alarm ● Yellow: Fault ● Green: Standby
Sensor Life	About 5 years
Silence Duration	45 s
Certifications	EN 50291-1:2018

5 Device Installation

5.1 Packing List

Check the package according to the following checklist. If you find device damage or any loss, contact the after-sales service.

Table 5-1 Checklist

Name	Quantity
Carbon Monoxide Alarm	1
Positioning Map	1
Screw Package	1
User's Manual	1

5.2 Installation Position

### In which room should the device be installed?

Ideally, a carbon monoxide alarm should be installed in every room containing a fuel-burning appliance and every bedroom. Additional alarms may be installed to ensure timely and adequate warning is given for family members. However, if there are fuel-burning appliances in more than one room and the number of CO alarm is limited, the following installation guidelines should be considered when choosing the best place to install the device:

- Remote rooms in which the occupants spend considerable time whilst awake and from which they may not hear alarm sound in another part of the premises.
- Rooms where occupants spend most time.
- Rooms containing flueless or open-flued appliances.
- If the alarm is in a room seldom used (for example a boiler room), the device should be put just outside the room so that the alarm may be heard more clearly.

Where in the room should the device be placed?

- Install a CO alarm in a room with a fuel-burning appliance.
  - ◇ Mount the device as far from the cooking appliances as possible but near to where the person sleeps.
  - ◇ Mount the device at a horizontal distance of between 1 m (3.28 ft) and 3 m (9.84 ft) from the nearest edge of potential source.
  - ◇ Mount the device at a height greater than the height of any door or window and at least 150 mm (5.91") from the ceiling.
  - ◇ If there is a partition in a room, the device should be located on the same side of the partition as the potential source.

Figure 5-1 Installation in a room with a fuel-burning appliance
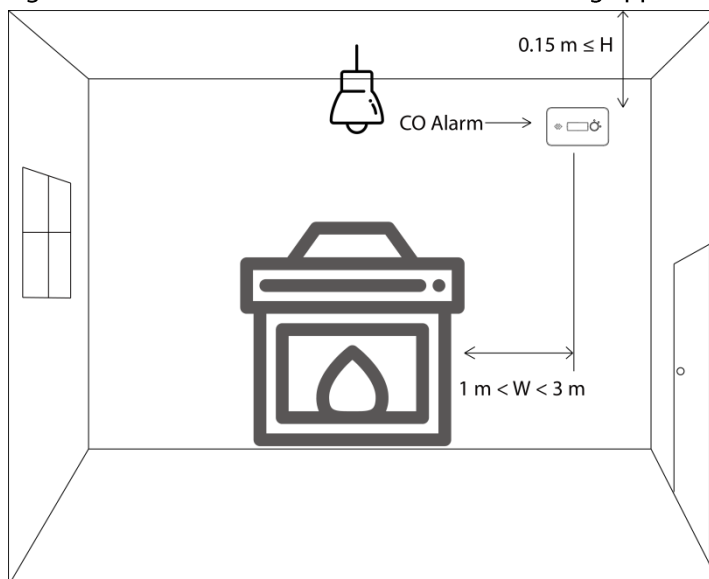
- Install a CO alarm in a room without a fuel-burning appliance.

Mount the device close to the breathing zone of the occupants.

Figure 5-2 Installation in a room without a fuel-burning appliance
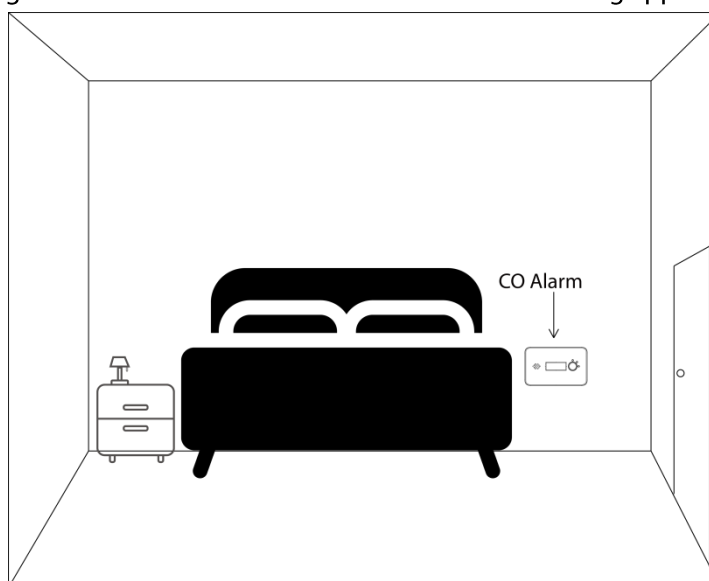
Where should be avoided?

Improper locations affect the alarm sensitivity. Avoid the installation in following areas:
- Dusty, dirty, greasy or humid areas.
- In poorly ventilated kitchens, garages and furnace rooms where circulate smoke or fumes under normal operating condition.
- Stoves and other hot and easily polluted places.
- Directly above the source of heat and steam.
- Directly under sunlight.

5.3 Installation Steps

Peel off the transparent plastic cover of the pre-installed battery first and then follow below steps to install the Alarm.

Step 1　Choose suitable place to install positioning map.

Step 2　Drill screw holes (5 mm [0.20"]) on the mounting surface as the positioning map shows, and then insert the expansion bolts into the holes.

Figure 5-3 Installation (1)
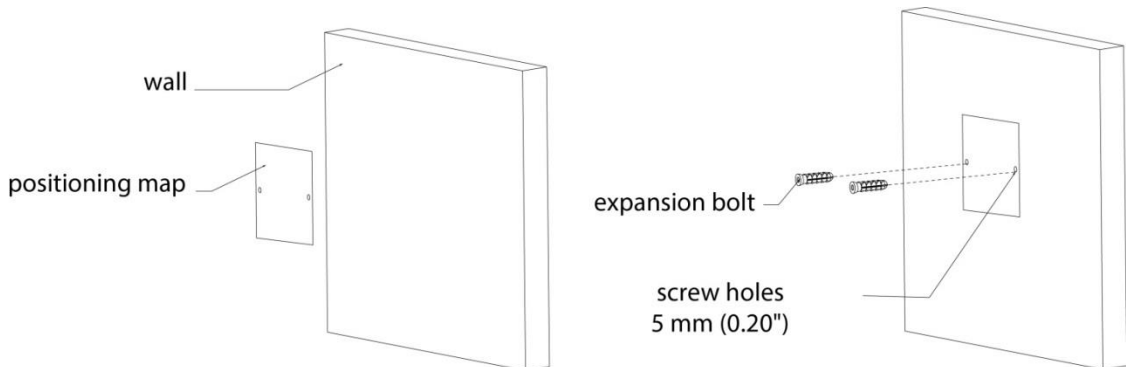
Step 3　Attach the Alarm to mounting surface.

Figure 5-4 Installation (2)

Step 4　After installation, test the device by pressing the Test/Silence button. Ensure the indicators, buzzer and screen operate properly.

6 Operation

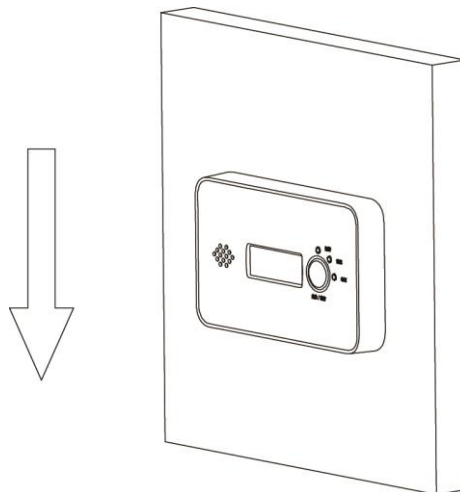| LCD Display	LED Status	Alarm Sound	Unit Status	Solutions
Lights up 3 seconds	All indicators flash 3 times	Buzzer beeps 3 times	Self test	None
-	Power indicator flashes green once every minute	None	The alarm is powering on and works normally	None
CO concentration	Alarm indicator flashes red once every second	Buzzer beeps once every second	Carbon monoxide leak is detected	Immediately check residents for symptoms of carbon monoxide poisoning and contact the proper authorities to resolve all CO problems. For more countermeasures，please see 1About Carbon Monoxide for reference
Lb	Fault indicator flashes yellow once every minute	Buzzer beeps once every minute	Low battery	Replace the battery immediately
Err	Fault indicator flashes yellow 2 times every minute	Buzzer beeps 2 times every minute	Malfunction	See 9 FAQ for reference
End	Fault indicator flashes yellow 3 times every minute	Buzzer beeps 3 times every minute	End of life	The maximum lifetime is reached. The device must be replaced as soon as possible

7 Test and Maintenance

7.1 Test

After the installation of the Device or regular maintenance, a test must be carried out to confirm that the Device is operating properly.

During the testing process, the defective Device should be addressed according to "FAQ" and "Maintenance", and then tested again. If it fails to complete the test successfully, please send the Device to the manufacturer for repair.

Device self-test

Press the **Test/Silence** button, indicator light flashes quickly and buzzer beeps.

Low voltage

When the battery voltage is lower than a certain threshold, indicator flashes and the buzzer beeps every minute until the battery is depleted. Please immediately replace the battery with approved types. After replacing the battery, it is recommended to test your CO alarm.

7.2 Maintenance

To keep your device in good working condition, please follow these requirements.
● Clean the shell: Clean the device at least once per year (recommended).
Keep the Device free of dust or inserts by gently vacuuming the shell with a soft brush attachment when required. Avoid cleaning solutions on the Device to prevent the possibility of contaminating the sensor.
● Weekly test: Test the device every week (recommended).
Under normal working conditions, press the **Test/Silence** button to ensure the beeper and LEDs work normally. If there is a malfunction, please repair it in time. After cleaning, please install the Device and test again.

8 Battery Replacement

When device has low battery warning, please replace battery immediately. Test the alarm for correct operation using test facility, whenever the battery is replaced. During the replacement, please pay attention to the positive and negative polarity markings. Only the following batteries can be replaced. Use of a battery other than those recommended below may have a detrimental effect on the device's operation.

📖 **NOTE**
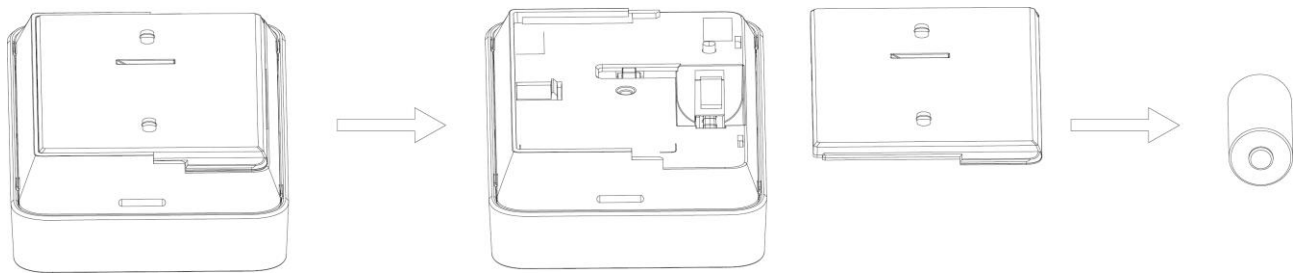
Recommended battery: EVE CR123A, PAIRDEER CR123A, RAMWAY CR123A, LISUN CR123A, HCB CR123A

⚠️ **WARNING**

Test the device for correct operation according to EN requirement every time after battery replacement.

Figure 8-1 Battery replacement

9 FAQ

Problem	Analysis	Solutions
Green indicator light does not flash	Battery is not installed	Install the battery
	Indicator light is broken	Contact technical support for advice
Press **Test/Silence** button, there is no alarm	Circuit fault	Contact technical support for advice
No response to detected CO	Circuit fault	Contact technical support for advice
Alarm chirps continuously	There is a large amount of volatile substances such as alcohol, perfume, gasoline, banana water and paint	Move to clean air to test performance
	Store for too long	Keep powering on for 2 hours
	Circuit fault	Contact technical support for advice

10 Disposal

Waste electrical products should not be disposed of your other household waste. Please dispose in an environmentally friendly manner, and strictly follow the local regulations regarding the disposal or recycling of the electrical device.

WARNING

Do not burn or dispose of in fire.

Appendix 1 Cybersecurity Recommendations

Cybersecurity is more than just a buzzword: it's something that pertains to every device that is connected to the internet. IP video surveillance is not immune to cyber risks, but taking basic steps toward protecting and strengthening networks and networked appliances will make them less susceptible to attacks. Below are some tips and recommendations on how to create a more secured security system.

Mandatory actions to be taken for basic device 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 device (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 device 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 device network security:

3. **Physical Protection**

    We suggest that you perform physical protection to device, especially storage devices. For example, place the device 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 device (such as USB flash disk, serial port), etc.

4. **Change Passwords Regularly**

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

5. **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.

6. **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.

7. **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.

8. **Enable HTTPS**

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

9. **MAC Address Binding**

    We recommend you to bind the IP and MAC address of the gateway to the device, thus reducing the risk of ARP spoofing.

10. **Assign Accounts and Privileges Reasonably**

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

11. **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.

12. **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.

13. **Secure Auditing**

    ● Check online users: we suggest that you check online users regularly to see if the device is logged in without authorization.

    ● Check device log: By viewing the logs, you can know the IP addresses that were used to log in to your devices and their key operations.

14. **Network Log**

    Due to the limited storage capacity of the device, 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.

15. **Construct a Safe Network Environment**

    In order to better ensure the safety of device 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.

ENABLING A SAFER SOCIETY AND SMARTER LIVING