User Manual

InBio Pro Plus Series

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English

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For further details, please visit our Company's website www.zkteco.com.

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If there is any issue related to the product, please contact us.

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About the Company

ZKTeco is one of the world's largest manufacturer of RFID and Biometric (Fingerprint, Facial, Finger-vein) readers. Product offerings include Access Control readers and panels, Near & Far-range Facial Recognition Cameras, Elevator/floor access controllers, Turnstiles, License Plate Recognition (LPR) gate controllers and Consumer products including battery-operated fingerprint and face template-reader Door Locks. Our security solutions are multi-lingual and localized in over 18 different languages. At the ZKTeco state-of-the-art 700,000 square foot ISO9001-certified manufacturing facility, we control manufacturing, product design, component assembly, and logistics/shipping, all under one roof.

The founders of ZKTeco have been determined for independent research and development of biometric verification procedures and the productization of biometric verification SDK, which was initially widely applied in PC security and identity authentication fields. With the continuous enhancement of the development and plenty of market applications, the team has gradually constructed an identity authentication ecosystem and smart security ecosystem, which are based on biometric verification techniques. With years of experience in the industrialization of biometric verifications, ZKTeco was officially established in 2007 and now has been one of the globally leading enterprises in the biometric verification industry owning various patents and being selected as the National High-tech Enterprise for 6 consecutive years. Its products are protected by intellectual property rights.

About the Manual

This manual introduces the operations of the **InBio Pro Plus Series**.

All figures displayed are for illustration purposes only. Figures in this manual may not be exactly consistent with the actual products.

Features and parameters with ★ are not available in all devices.

Document Conventions

Conventions used in this manual are listed below:

GUI Conventions

For Software	
Convention	**Description**
Bold font	Used to identify software interface names e.g. **OK**, **Confirm**, **Cancel**.
>	Multi-level menus are separated by these brackets. For example, File > Create > Folder.
For Device	
Convention	**Description**
< >	Button or key names for devices. For example, press <OK>.
[ ]	Window names, menu items, data table, and field names are inside square brackets. For example, pop up the [New User] window.
/	Multi-level menus are separated by forwarding slashes. For example, [File/Create/ Folder].

Symbols

Convention	Description
	This implies about the notice or pays attention to, in the manual.
	The general information which helps in performing the operations faster.
	The information which is significant.
	Care taken to avoid danger or mistakes.
	The statement or event that warns of something or that serves as a cautionary example.

Table of Contents

1 Safety Instructions

1.1 Important Security Instructions

1. Read and follow the instructions carefully before operation. Please keep the instructions for future reference.
2. Accessories: Please use the accessories recommended by the manufacturer or delivered with the product. Other accessories are not recommended, including major alarming systems and monitoring systems. The primary alarming and monitoring system should comply with the local applicable fire-prevention and security standards.
3. Installation cautions: Do not place this equipment on an unstable table, tripod mount, support, or base, lest the equipment falls and get damaged or any other undesirable outcome resulting in severe personal injuries. Therefore, it is essential to install the equipment as instructed by the manufacturer.
4. All peripheral devices must be grounded.
5. No external connection wires can be exposed. All the connections and idle wire ends must be wrapped with insulating tapes to prevent any damage to the equipment by accidental contact of the exposed wires.
6. Repair: Do not attempt to have an unauthorized repair of the equipment. Disassembly or detachment is risky and likely to cause shock. All repairs should be done by a qualified technician.
7. If any of the following cases arise, disconnect the power supply from the equipment first and intimate the technician immediately.
   - The power cord or connector is damaged.
   - Any liquid or material spilled into the equipment.
   - The equipment is wet or exposed to bad weather (rain, snow, etc.).
   - If the equipment cannot work properly, even if it is operated as instructed, please be sure to adjust only the control components specified in the operating instructions. Incorrect adjustments on other control components may cause damage to the equipment; even the equipment may fail to operate permanently.
   - The equipment falls, or its performance changes dramatically.
8. Replacing components: If it is necessary to replace a component, only the authorized technician can replace the accessories specified by the manufacturer.
9. Security inspection: After the equipment is repaired, the technician must conduct security inspection to ensure proper working of the equipment.

10. Power supply: Operate the equipment with only the type of power supply indicated on the label. Contact the technician for any uncertainty about the type of power supply.

Violation of any of the following cautions is likely to result in personal injury or equipment failure. We will not be responsible for the damages or injuries caused thereby.

- Before installation, switch off the external circuit (that supplies power to the system), including locks.
- Before connecting the equipment to the power supply, ensure the output voltage is within the specified range.
- Never connect the power before completion of installation.

1.2 Installation Instructions

1. The conduits of wires under relay must match with the metal conduits; other wires can use PVC conduits, to prevent failure caused by rodent damage. The Control panel is designed with proper antistatic, lightning-proof, and leakage-proof functions, ensure its chassis and the AC ground wire are correctly connected and the AC ground wire is grounded physically.
2. It is recommended not to plug/unplug connection terminals frequently when the system is powered on. Be sure to unplug the connection terminals before starting any relevant welding job.
3. Do not detach or replace any control panel chip without permission, and an unpermitted operation may cause damage to the control panel.
4. It is recommended not to connect any other auxiliary devices without permission. All non-routine operations must be communicated to our engineers in advance.
5. A control panel should not share the same power socket with any other large-current device.
6. It is preferable to install card readers and buttons at the height of **1.4 to 1.5m** above the ground or subject to customers' usual practice for proper adjustment.
7. It is advised to install control panels at places where maintenance is easy, like **a weak electric well**.
8. It is strongly recommended that the exposed part of any connection terminal should **not be longer than 4mm**, and specialized clamping tools may be used to avoid short-circuit or communication failure resulting from accidental contact with excessively exposed wires.
9. To save access control event records, export the data periodically from control panels.
10. Prepare countermeasures according to application scenarios for unexpected power failure, like **selecting power supply with UPS**.

11. To protect the access control system against the self-induced electromotive force generated by an electronic lock at the instant of switching off/on, it is necessary to **connect a diode in parallel** (please use the FR107 delivered with the system) with the electronic lock to release the self-induced electromotive force during onsite connection for application of the access control system.
12. It is recommended that an electronic lock and a control panel should use separate power supplies.
13. It is recommended to use the power supply delivered with the system as the control panel power supply.
14. In a place with substantial magnetic interference, galvanized steel pipes or shielded cables are recommended, and proper grounding is required.

2 Overview

2.1 Introduction

InBio Pro Plus Series is a project oriented, high-end product line with distinctive features, including embedded facial and fingerprint authentication, as well as advanced access control functions. Equipped with TCP/IP, it enables robust remote management and connectivity over local (LAN) and wide area networks (WAN), enhancing deployment flexibility and scalability.

Comprising the InBio160 Pro Plus, InBio260 Pro Plus, and InBio460 Pro Plus models, the system supports up to 3,000 face templates and 20,000 fingerprint templates, a maximum of 100,000 card users, and 100,000 dynamic QR code capacity.

The InBio Pro Plus Series adopts RS-485 interfaces supporting ZKTeco's RS-485 protocols for facial reader (KF1100 Pro/ KF1200 Pro) and fingerprint reader (FR1200/ FR1500S). InBio Pro Plus Series also accommodates ZKTeco's RS-485 and OSDP (Ver 2.1.7) for card reader access and the Series is compatible with ZKTeco's QR code readers (QR50/ QR500/ QR600). Also, the InBio Pro Plus Series integrates seamlessly with third-party access control readers via Wiegand interface (W26/ W34/ W66).

To enhance data security, the InBio Pro Plus Series employs the AES 256-bit algorithm encryption to protect data storage. Also, it utilizes the AES 128-bit algorithm encryption for communication with readers over RS-485 (ZKTeco's RS-485 or OSDP). Additionally, the InBio Pro Plus Series ensures secure communications between the server and the web client through HTTPS/ TLS1.2 encryption.

2.2 Features

Embrace Multi Biometrics Authentication

InBio Pro Plus Series is equipped with embedded facial, fingerprint and card authentication. With RS-485 interfaces, InBio Pro Plus Series is compatible with the ZKTecoo's KF1100 Pro/ KF1200 Pro (face reader) and FR1200/ FR1500S (fingerprint reader). It allow swiftly transmit face or fingerprint templates to the InBio Pro Plus via RS-485.

Communication

InBio Pro Plus controllers can be installed easily on your network and support HTTP/ HTTPS communication. Web server allows setting and modification of network parameters directly and easily.

Elevated Capacity and Data Security

Support a maximum of 3,000 face template ,up to 20,000 fingerprint templates, up to 100,000 card users and a maximum of 100,000 Dynamic QR code capacity. By employing the AES 256-bit algorithm for data encryption, the system safeguards against data loss in the event of a power outage or interrupted network connection.

Reduce Maintenance Cost

The InBio Pro Plus Series allows for remote online firmware updates by ZKBio CVSecurity, facilitating seamless updates not only for the controller but also for the slave RS-485 readers, thereby reducing maintenance expenses.

Seamless RFID Authentication Integration

With an RS-485 and Wiegand input reader interface, the InBio Pro Plus Series effortlessly connects with ZKTeco's RS-485/ OSDP (Ver 2.1.7) card readers and supports Wiegand reader formats (W26/ W34/ W66).

Expanded Control and Interface Capabilities

After programming, auxiliary relays can be configured to operate lighting systems, alarm units, and intrusion detection panels. These relays can also interface with supplementary locking mechanisms and gate controllers, enhancing overall security and automation.

Three unique InBio Pro Plus Models Available

InBio Pro Plus series comprises three models to suit various project needs. InBio Pro Plus consists of 1-door, 2-door, and 4-door models, that can be mixed and matched in an optimized system architecture and to reduce the cost of unused capacity architecture.

Advance Access Control Functions

Equipped with a suite of standard access control functions including a built-in web server, support for up to 14-digit User IDs, customizable access levels and groups, holiday scheduling, antipassback, anti-tailgating measures, linkage capabilities, global linkage settings, support for multiple verification methods, and the ability to integrate up to eight expansion boards.

Enhanced Security with Dynamic QR Code

Utilizing an RS-485 QR reader and ZKBio CVSecurity app, the InBio Pro Plus Series offers Dynamic QR codes and integrates with the visitor module, allowing visitors to access authorization by simply opening an HTML page on their smartphone.

2.3 Specifications

Model	InBio160 Pro Plus	InBio260 Pro Plus	InBio460 Pro Plus
Operation System	Linux OS		
Hardware	CPU: Single Core @ 1.0GHz RAM: 128MB; ROM: 256MB		
Authentication Method	Card / Password / Fingerprint / Face / QR Code		

Access Point Capacity	1 Access Point	2 Access Points	4 Access Points
Reader Capacity	2*RS-485 Readers (ZKTeco RS-485 / OSDP), 2* 26 / 34 / 66 bit Wiegand Readers	4*RS-485 Readers (ZKTeco RS-485 / OSDP), 4* 26 / 34 / 66 bit Wiegand Readers	8*RS-485 Readers (ZKTeco RS-485 / OSDP), 4* 26 / 34 / 66 bit Wiegand Readers
IO Expansion Board Capacity	8pcs EX0808 (RS-485 connection)		
User Capacity	100,000		
Card Capacity	100,000 (1:N) (Standard)		
Fingerprint Template Capacity	20,000 (1:N) (Standard)		
Face Template Capacity	3,000 (1:N) (Standard)		
QR Code Capacity	100,000 (Static QR Code / Dynamic QR Code)		
Transaction Capacity	500,000 (Standard)		
Biometric Algorithm	ZKFingerprint V10.0 / V13.0(Default) ZKLiveface 3.5 / 4		
Biometric Authentication Speed	<0.3s @ Fingerprint <0.3s @ Facial		
False Acceptance Rate (FAR) %	FAR ≤ 0.0001% @ Fingerprint FAR ≤ 0.01% @ Facial		
False Rejection Rate (FRR) %	FRR ≤ 0.01% @ Fingerprint FRR ≤ 0.02% @ Facial		
Number of Inputs	1 * Exit Button, 1 * Door Status, 1 * AUX Input or 64 (with 8pcs of EX0808 IO expansion board)	2 * Exit Button, 2 * Door Status, 2 * AUX Inputs or 64 (with 8pcs of EX0808 IO expansion board)	4 * Exit Button, 4 * Door Status, 4 * AUX Inputs or 64 (with 8pcs of EX0808 IO expansion board)
Number of Outputs	1*Form C Relay for Lock, 1*Form C Relay for Aux Output or 64 (with 8pcs of EX0808 IO expansion board)	2*Form C Relay for Lock, 2*Form C Relay for Aux Output or 64 (with 8pcs of EX0808 IO expansion board)	4*Form C Relay for Lock, 4*Form C Relay for Aux Output or 64 (with 8pcs of EX0808 IO expansion board)
Max. Card Length	Supports up to 66 bits Card Length		
QR Code	PDF417, Data Matrix, MicroPDF417, Aztec scanning in third-party development projects. Dynamic QR codes on the ZKBio CVSecurity mobile application		

Communication	TCP/IP *1 RS-485: ZKTeco RS-485 / OSDP (Optional)*1 Wiegand (Input)*2 USB: Type A (USB Drive Only)*1 Aux Inputs *1, Aux Outputs *1, Electric Lock*1, Door Sensor*1, Exit Button*1, Alarm*1	TCP/IP *1 RS-485: ZKTeco RS-485 / OSDP (Optional)*1 Wiegand (Input)*4 USB: Type A (USB Drive Only)*1 Aux Inputs *2, Aux Outputs *2, Electric Lock*2, Door Sensor*2, Exit Button*2, Alarm*2	TCP/IP *1 RS-485: ZKTeco RS-485 / OSDP (Optional)*1 Wiegand (Input)*4 USB: Type A (USB Drive Only)*1 Aux Inputs *4, Aux Outputs *4, Electric Lock*4, Door Sensor*4, Exit Button*4, Alarm*4
Standard Functions	Webserver, Upto 14-digit User ID, Access Levels, Access Groups, Holidays, Anti-passback,Anti-tailgating, Linkage, Global Linkage, Multiple Verification Methods		
Access Control Interface	Wiegand (Card Reader), RS-485(RS-485 Card Reader/ Fingerprint Reader / Facial Recognition Reader/QR code Reader)		
Power Supply	9.6V - 14.4V DC		
Operating Temperature	0°C to 45°C		
Operating Humidity	20% to 80% RH (Non-condensing)		
Dimensions (mm)	185.12 mm*106 mm*36.07 mm	185.12 mm*106 mm*36.07 mm	226 mm*106 mm*36.07mm
Gross Weight	1.004Kg	1.037Kg	1.098Kg
Net Weight	0.390Kg	0.422Kg	0.494Kg
Supported Software	ZKBio CVSecurity		
Installation	Supported DIN Rail mount / Wall-mount / Metal Enclosure (Optional)		
Enclosure (Optional)	Size: 350 mm*90 mm*300 mm (L*W*H) Material: SPCC steel Power Supply Unit: input 110V~240V AC,output 12V 2A;1A DC Backup Battery: Space reserved [Backup Battery Recommended size: (L*W*H):151 x 94 x 65 mm)] Gross Weight:3.57Kg	Size: 350 mm*90 mm*300 mm (L*W*H) Material: SPCC steel Power Supply Unit: input 110V~240V AC,output 12V 4A+1A DC Backup Battery: Space reserved [Backup Battery Recommended size: 151 x 94 x 65 mm(L*W*H)] Gross Weight:3.57Kg	Size: 350 mm*90 mm*300 mm (L*W*H) Material: SPCC steel Power Supply Unit: input 110V~240V AC,output 12V 4A+1A DC Backup Battery: Space reserved [Backup Battery Recommended size:151 x 94 x 65 mm(L*W*H)] Gross Weight:3.77Kg
Certifications	ISO14001, ISO9001, CE, FCC, RoHS		
Factory ID	AC02-C11H-U10	AC02-C12H-U10	AC02-C14H-U10

2.4 Dimension

2.4.1 InBio160 Pro Plus

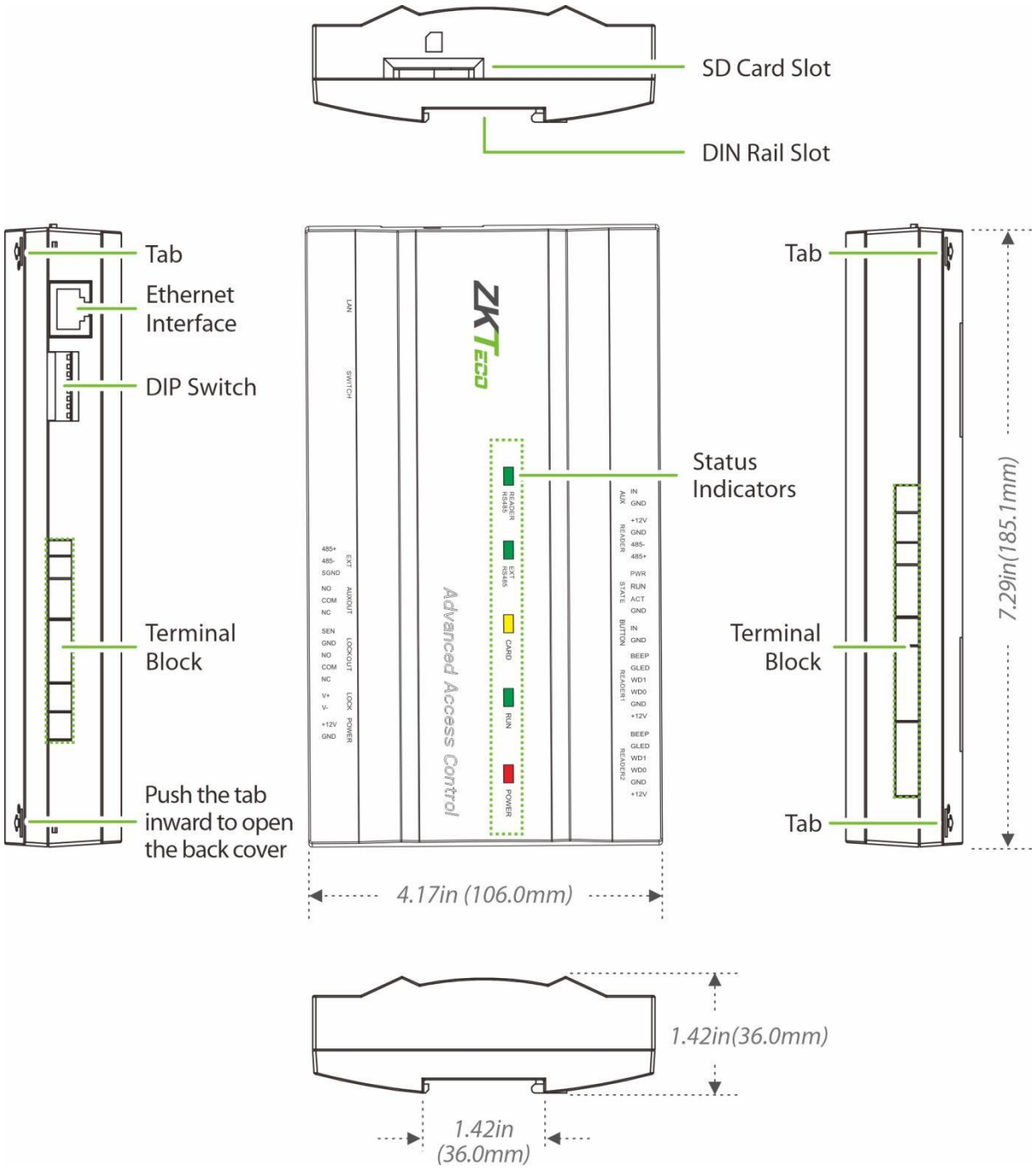


Figure 2-1 InBio 160 Pro Plus Controller Appearance

2.4.2 InBio260 Pro Plus

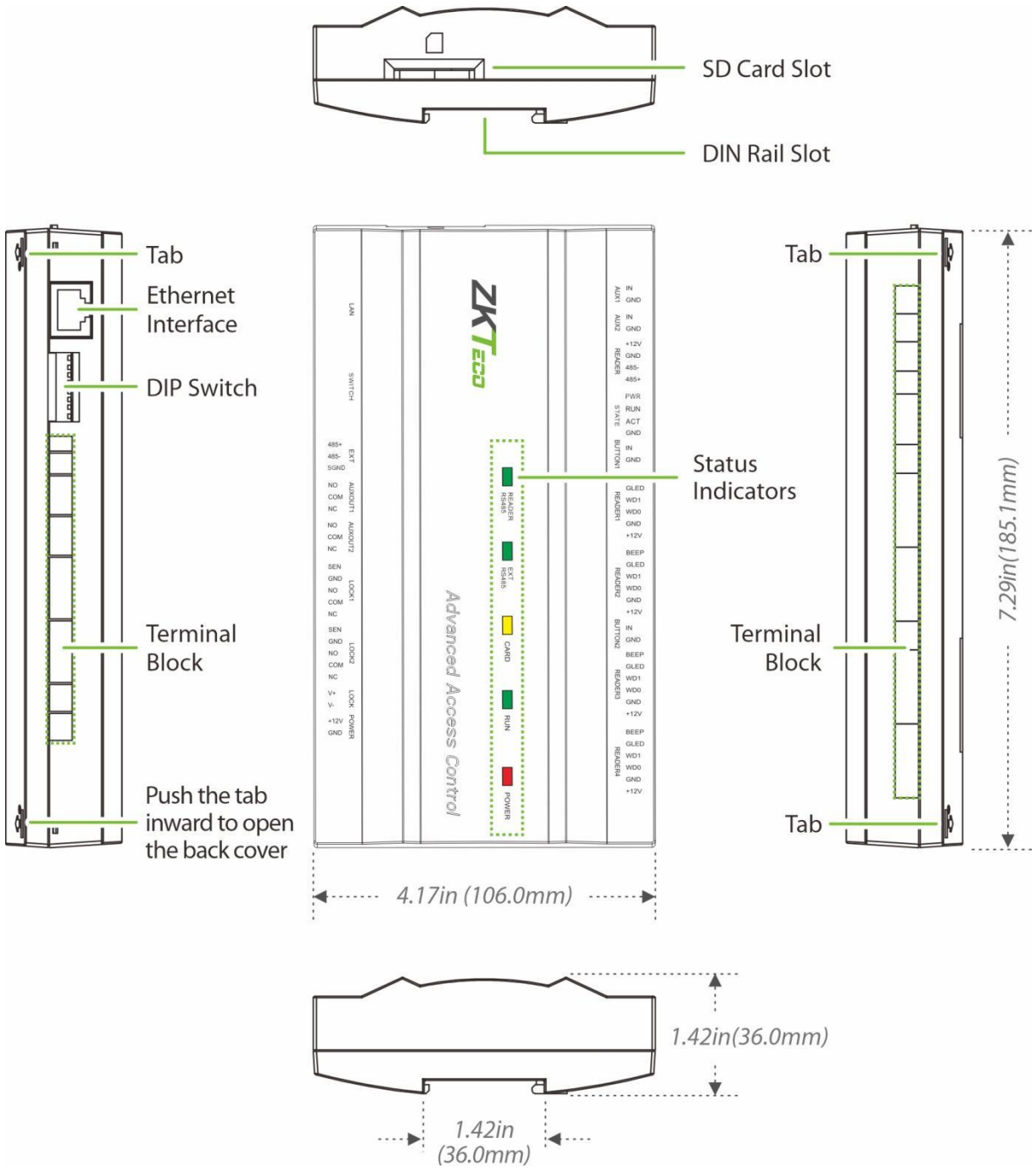


Figure 2-2 InBio260 Pro Plus Controller Appearance

2.4.3 InBio460 Pro Plus

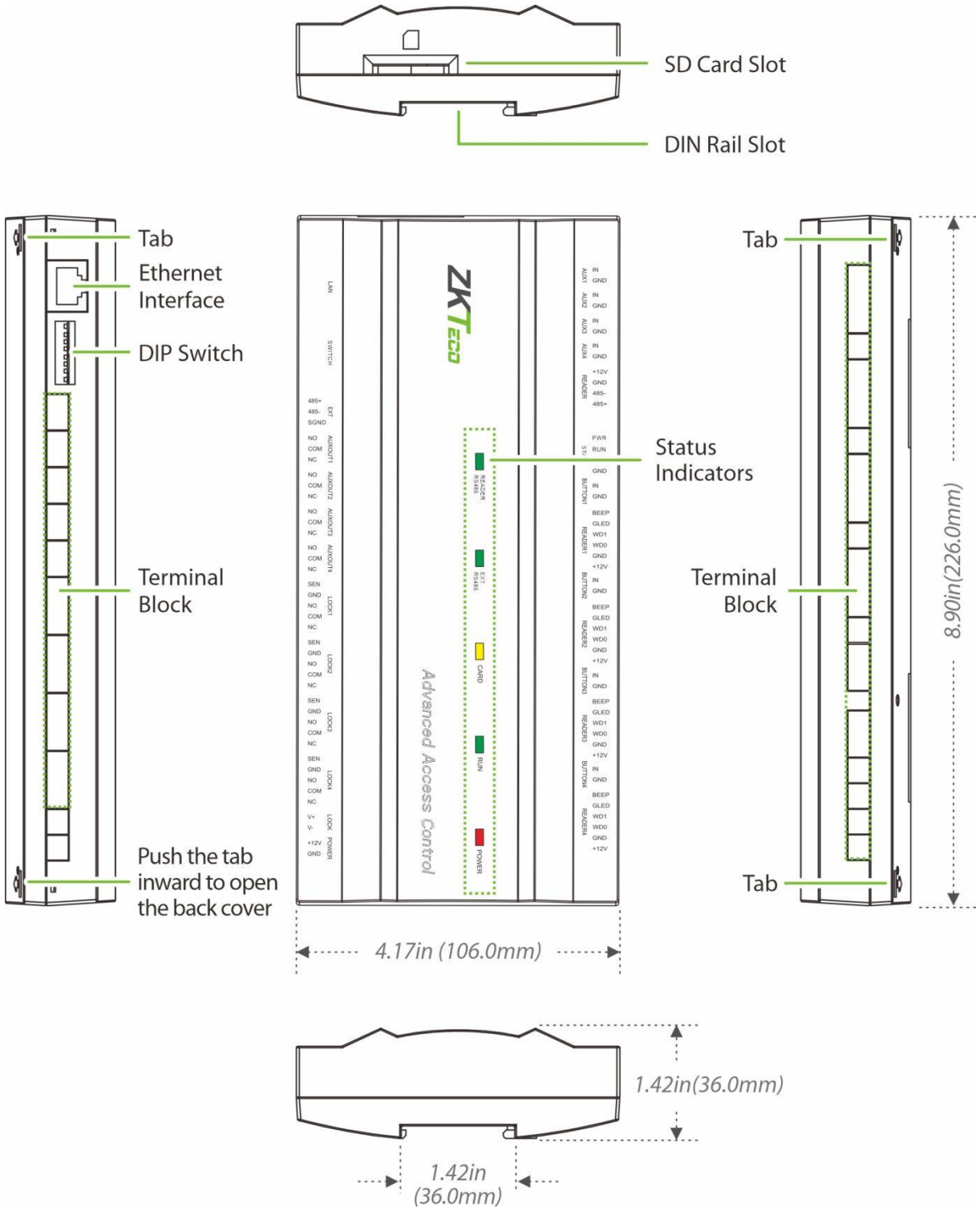


Figure 2-3 InBio460 Pro Plus Controller Appearance

2.4.4 Metal Enclosure

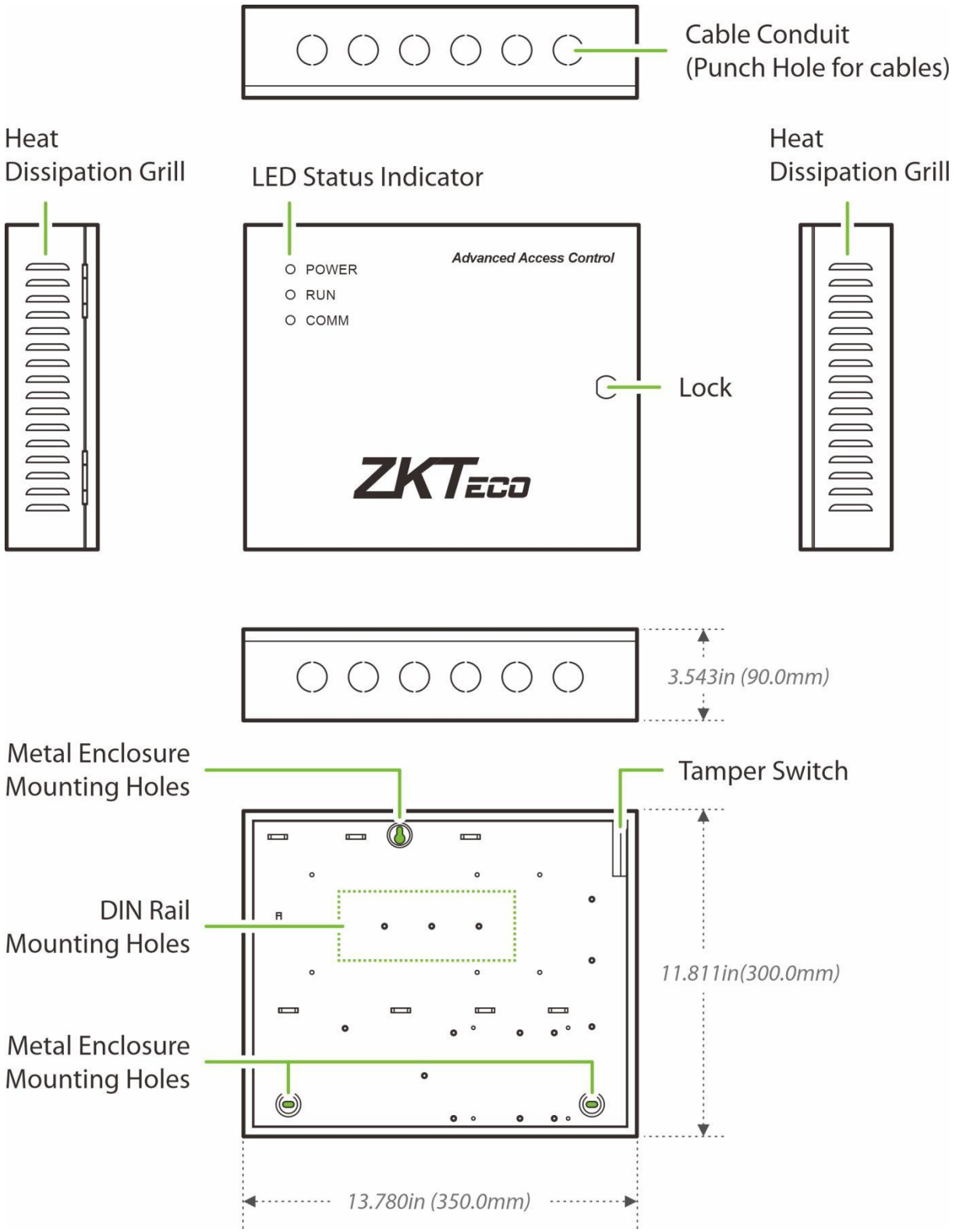


Figure 2-4 Metal Enclosure Appearance

2.5 Control Panel Indicators

1. When the InBio160/260/460 Pro Plus is powered on, normally the POWER indicator (red) is lit constantly, the RUN indicator (green) shall flash slowly (indicating the system is normal), and other indicators are all off.

- LINK indicator (green): indicates proper TCP/IP connection if it is lit constantly.
- ACT indicator (yellow): indicates transmission of TCP/IP data if it flashes.
- READER RS485 (TX) indicator (yellow): Reader 485 communication indicator, indicates sending of 485 data if it flashes.
- READER RS485 (RX) indicator (green): Reader 485 communication indicator, indicates receiving of 485 data if it flashes.;
- EXT RS485 (TX) indicator (yellow): PC485 communication indicator, indicates sending of 485 data if it flashes.
- EXT RS485 (RX) indicator (green): PC485 communication indicator, indicates receiving of 485 data if it flashes.
- Auxiliary output indicator (green): Always (green) indicates it is in use.
- Lock indicator (green): Always (green) indicates lock is open.
- RUN indicator (green): Flashing indicates the system works normally.
- CARD indicator (yellow): indicates input of Wiegand signal if it is lit.

2. **Recommended use of wires:**

- Use 2-conducotor power cord.
- Use 6-conductor wire between wiegand reader and control panel (RVVP 6*0.5mm) (Choose the appropriate cord for the interface you connect, such as 6, 8, 10 cord.)
- Use 4-conducotor lock power cord (RVV 4*0.75mm)
- Use 4-conducotor lock power cord (RVV 4*0.75mm)
- Use 2-conducotor switch power cord (RVV 2*0.5mm)

3. The auxiliary input may be connnected to infrared body detectors, alam switches, etc.
4. The auxiliary output may be connected to door bells, alarms, etc.

Indicator Diagram:

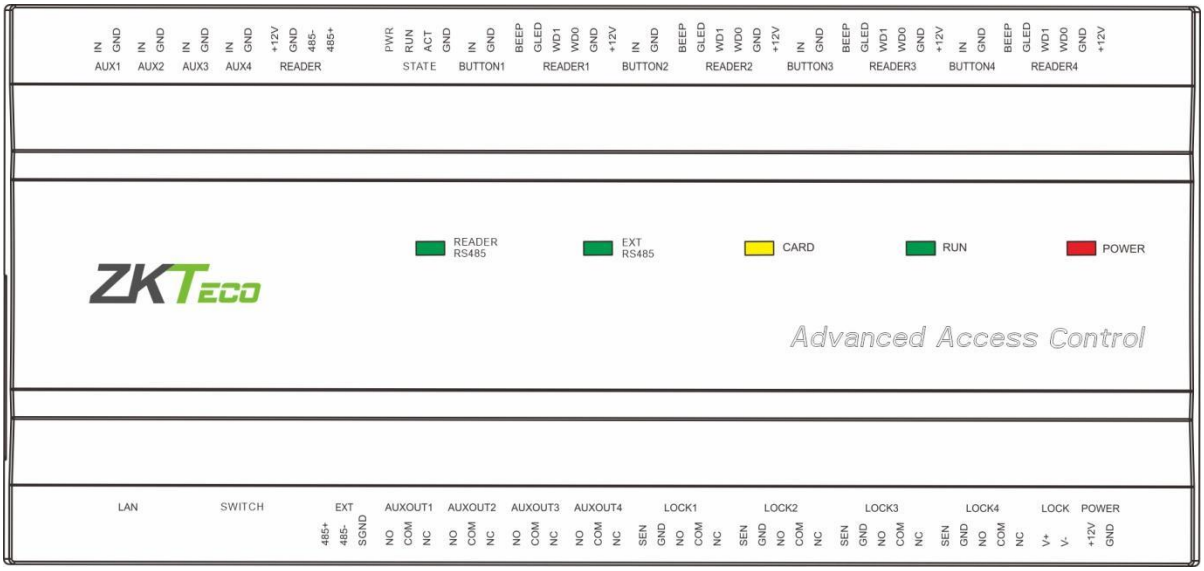


Figure 2-5 Indicators in the InBio460 Pro Plus

3 Installation and Connection

Ensure that the device is installed following the provided installation instructions. Failure to do so may result in voiding of the devices warranty.

3.1 Installing the metal enclosure on the wall

1. According to the mounting holes position of the metal enclosure. Drill four mounting holes in a suitable spot on the wall and make sure it is about **114 inches (2.9m)** above the ground, which can be adjusted according to actual needs. Take care to leave at least **3.937 inches (100 mm)** on the left side of the metal enclosure.
2. Place the Anchors in the mounting holes.
3. Then f ix the metal enclosure with the self-tapping screws as shown below.

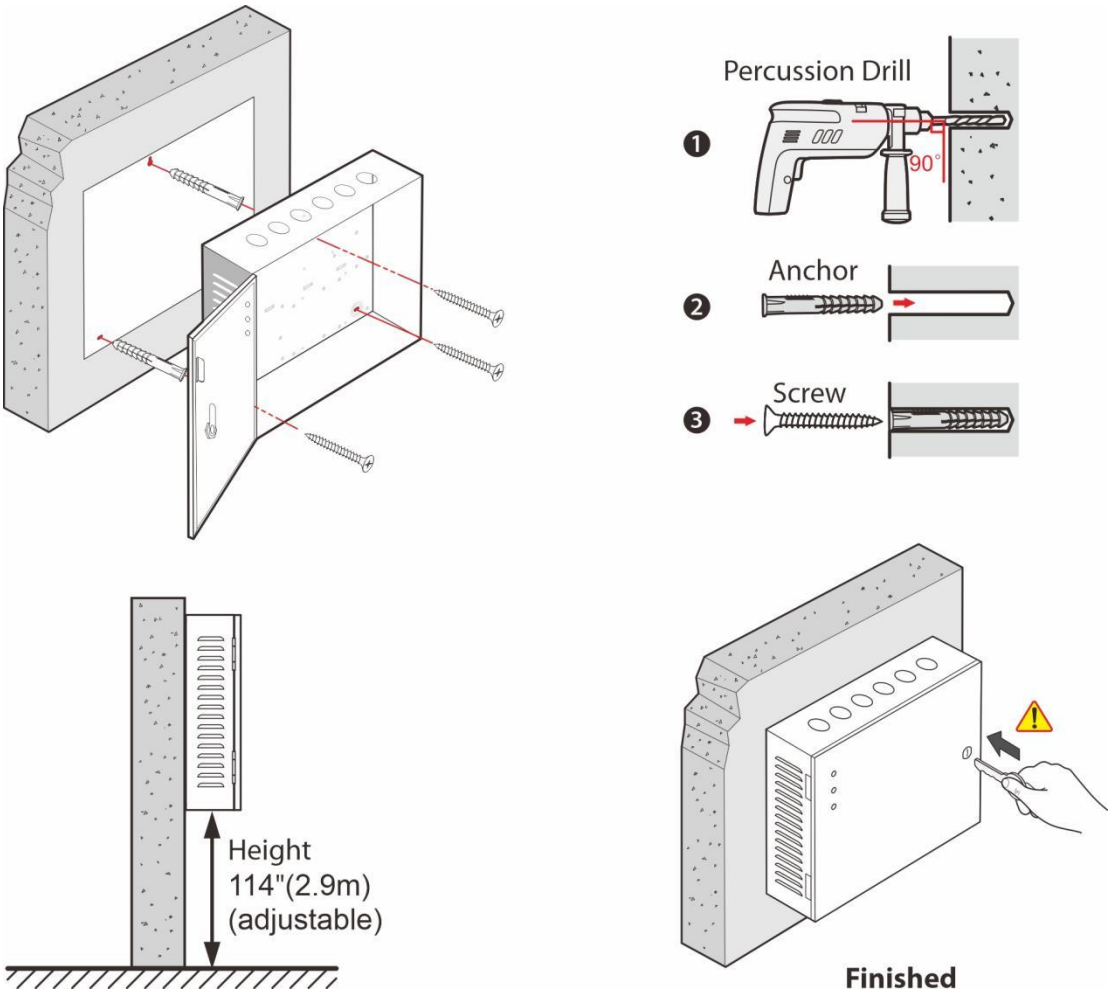


Figure 3-1 Installation the metal enclosure on the wall

Note: *The metal enclosure is equipped with an tamper alarm switch. When it is working normally, please keep the enclosure closed.*

3.2 Installation with original DIN rail

1. Mount the original DIN rail directly onto the enclosure, as illustrated in the figure below.

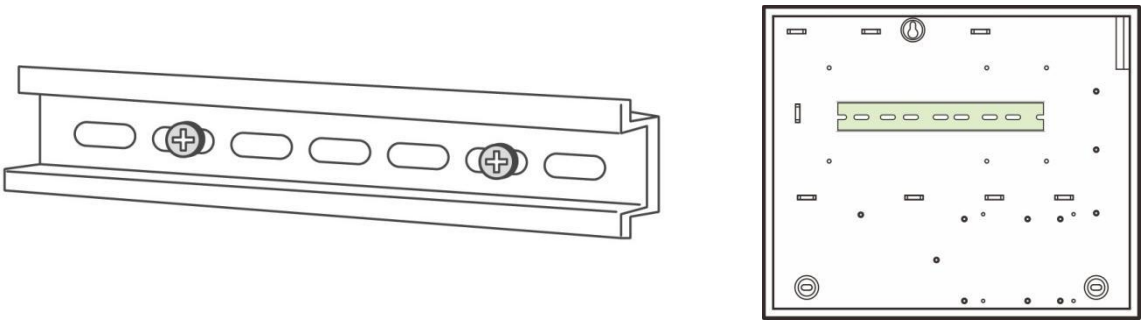


Figure 3-2 Mount the DIN rail

2. Engage the hooks on the top of the controller with the DIN rail and firmly press the controller onto the rail until it locks into place, as depicted in **Figure 3-3** below.

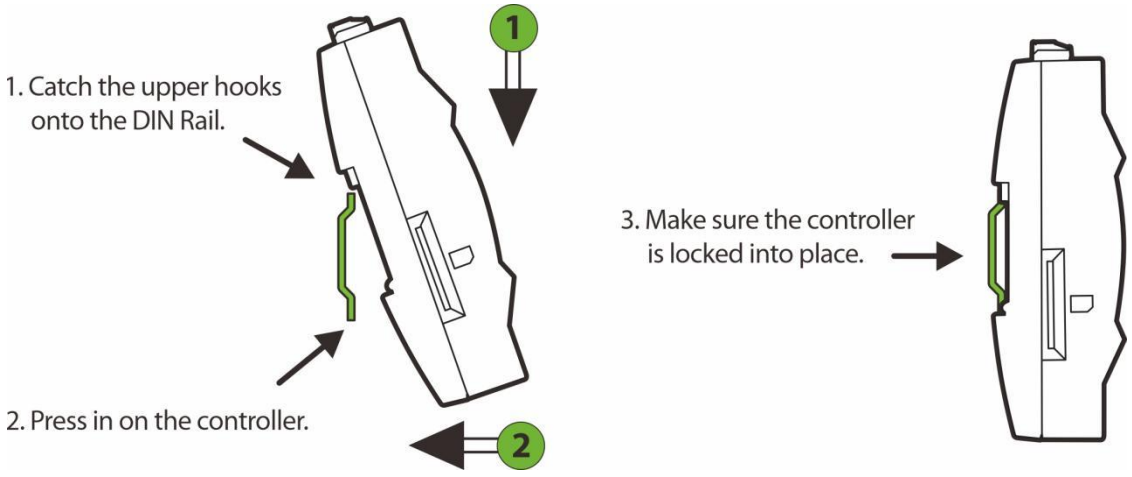


Figure 3-3 Mount the controller to the DIN rail adapter

3.3 Installation of access control panel wires

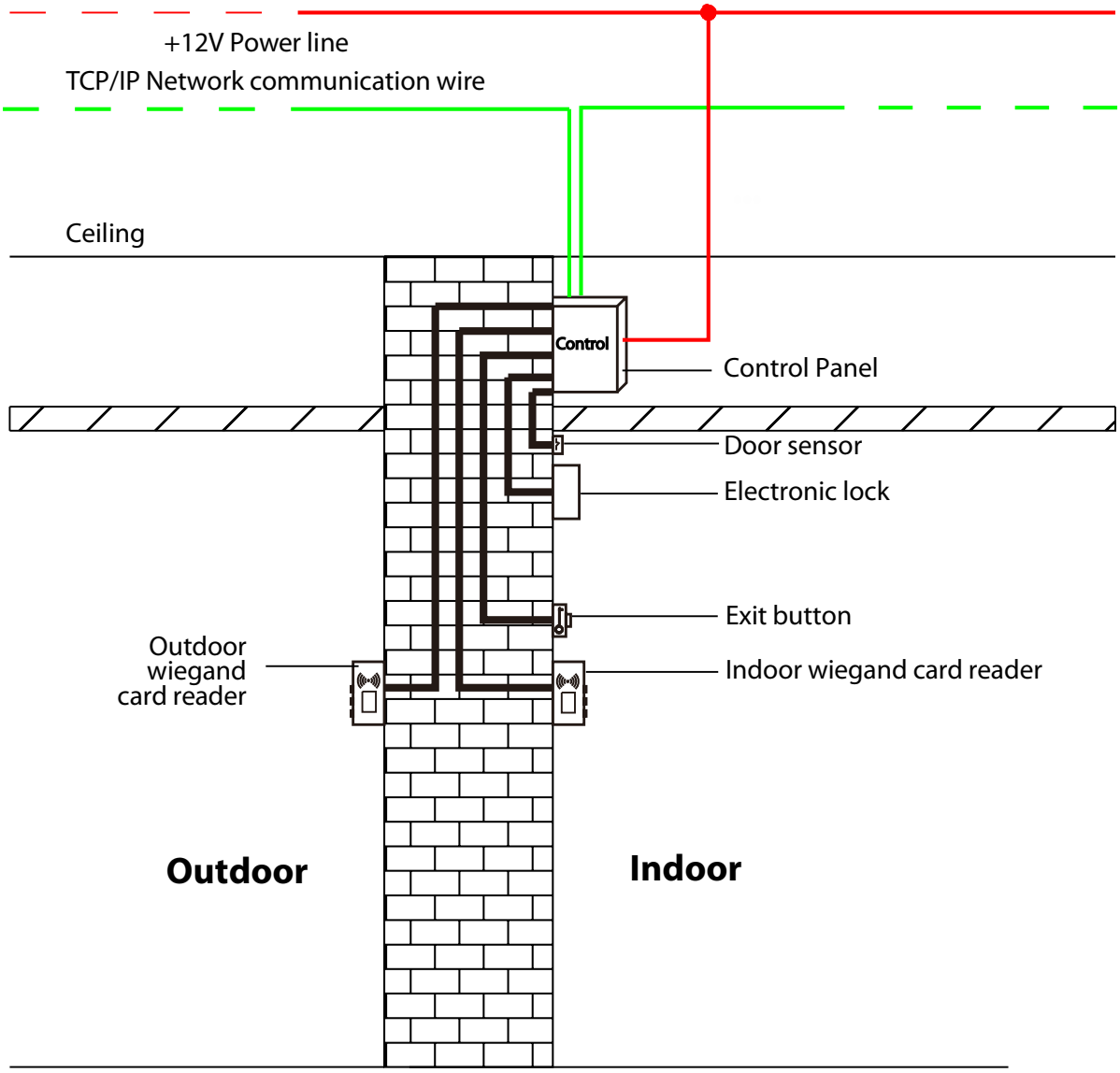


Figure 3-4 Access Control Panel Wire Installation Diagram

Remarks:

- *Ensure the power supply is disconnected before connecting the wires; otherwise, it may cause severe damage to the equipment.*
- *The access control wires must be separated according to heavy and light current; the control panel wires, electronic lock wires, and exit button wires must run through their casing pipes, respectively.*

3.4 Controller System Installation

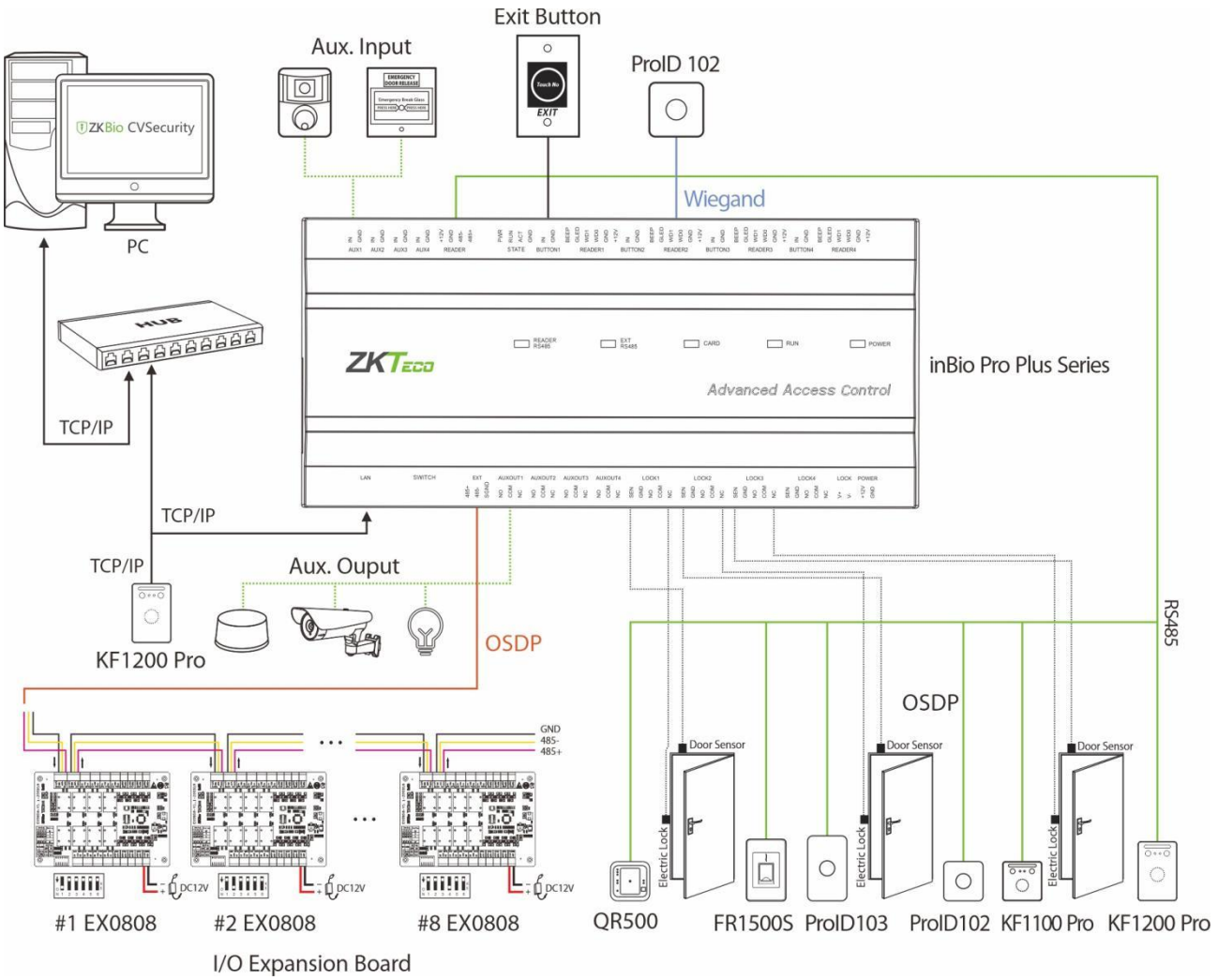


Figure 3-5 Schematic Diagram of System Installation

Notes:

- *The access control management system consists of two parts: Management Workstation (PC) and Control panel. The management workstation and control panel communicate through TCP/IP. The communication wires should be kept away from high-voltage wires as far as possible and should be neither routed in parallel with nor bundled with power wires.*
- *A management workstation is a PC connected with the network. By running the access control management software installed in the PC, access control management personnel can remotely perform various management functions, like adding/deleting a user, viewing event records, opening/closing doors, and monitoring the status of each door in real-time.*

3.5 Access Control Operator Panel System Power Supply Structure

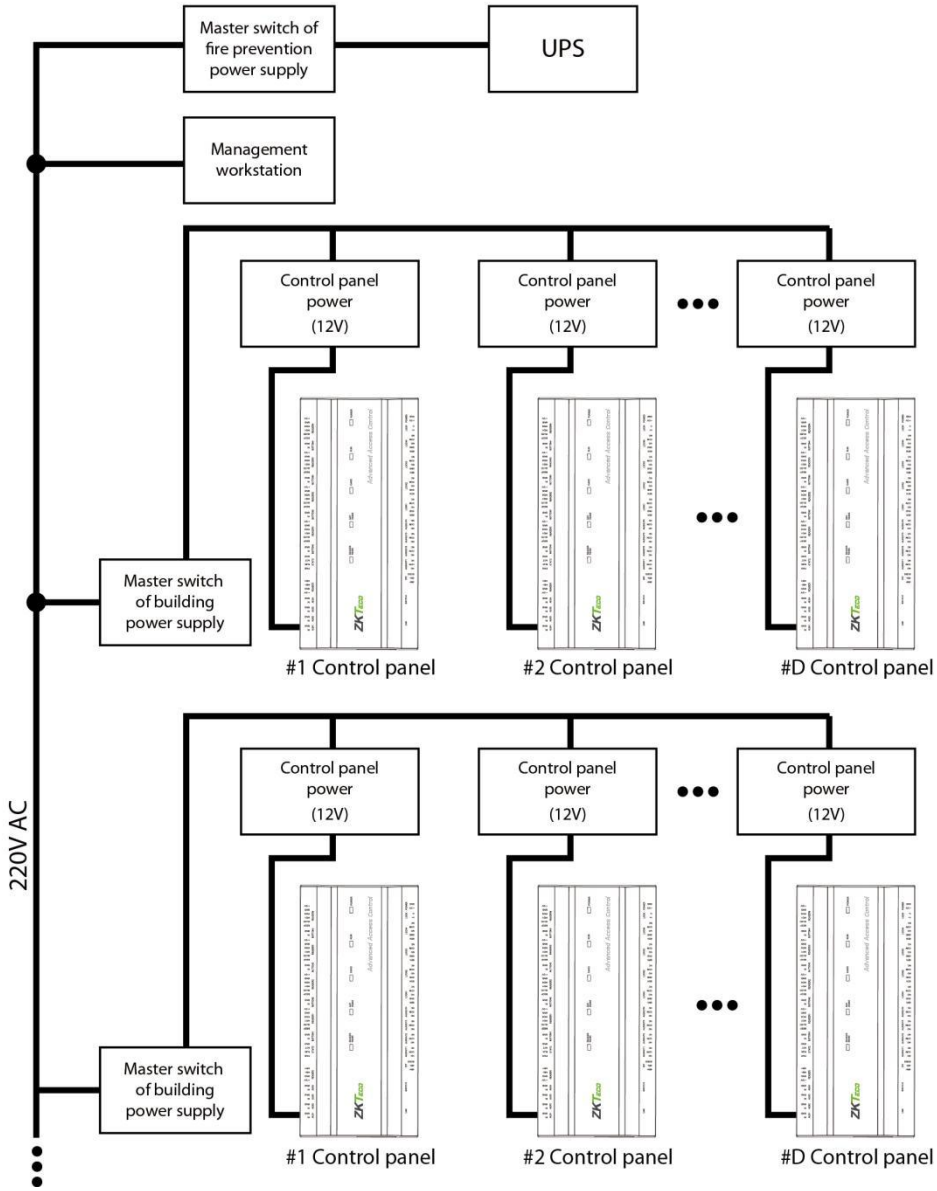


Figure 3-6 Access Controller System Power Supply

Remarks:

- *An access control operator panel is powered by +12V DC. Generally, to reduce power interference between control panels, each control operator panel should be powered separately. When high reliability is required, control panels and electronic locks should be powered respectively.*
- *To prevent power failure of a control operator panel from making the whole system unable to work normally, the access control management system is usually required to have one UPS at least, and access control locks are powered externally to guarantee the access control management system can still work normally during power failure.*

4 Terminal and Wiring Description

4.1 Terminal Description

4.1.1 InBio160 Pro Plus

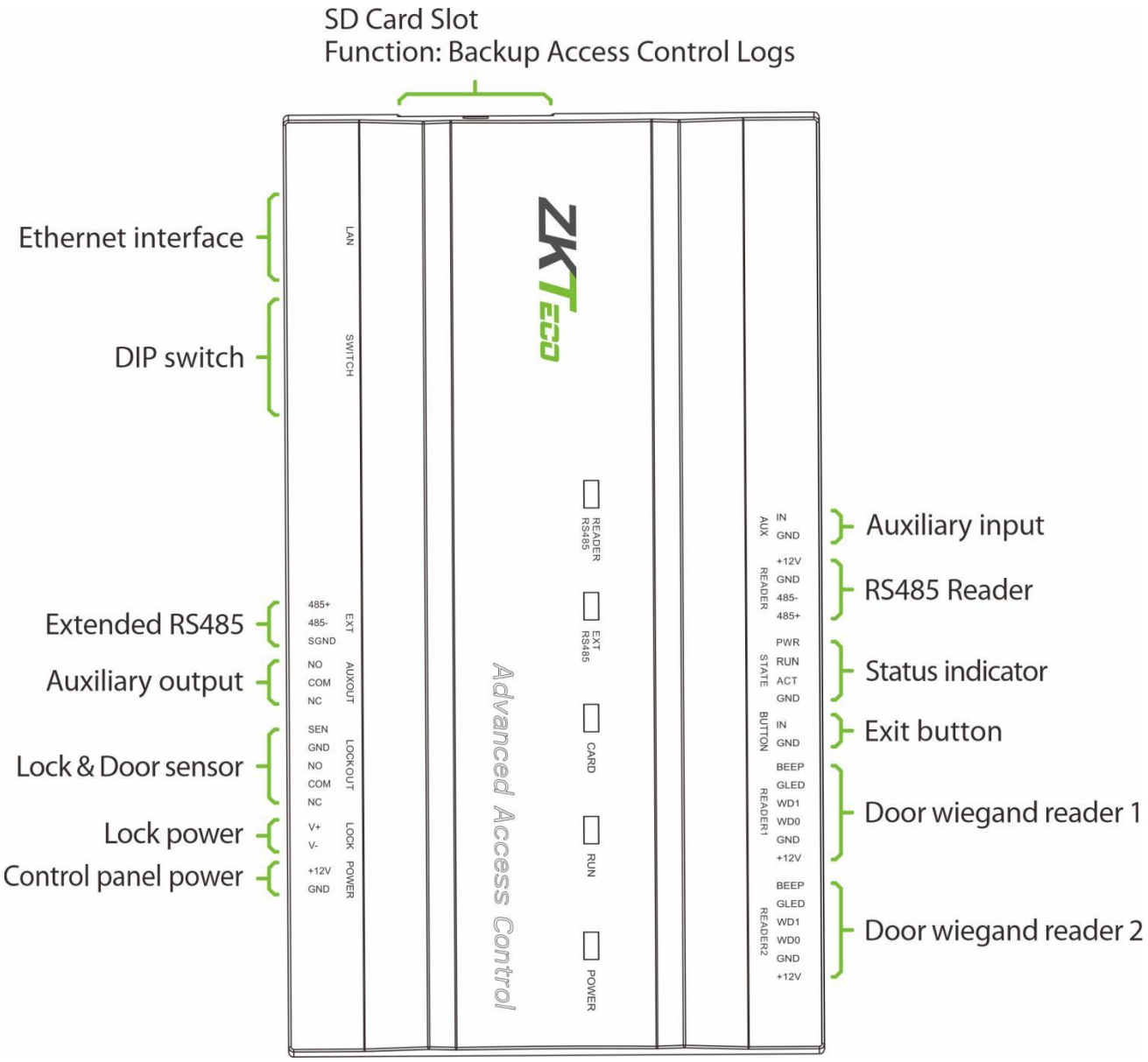


Figure 4-1 InBio160 Pro Plus terminal description

4.1.2 InBio260 Pro Plus

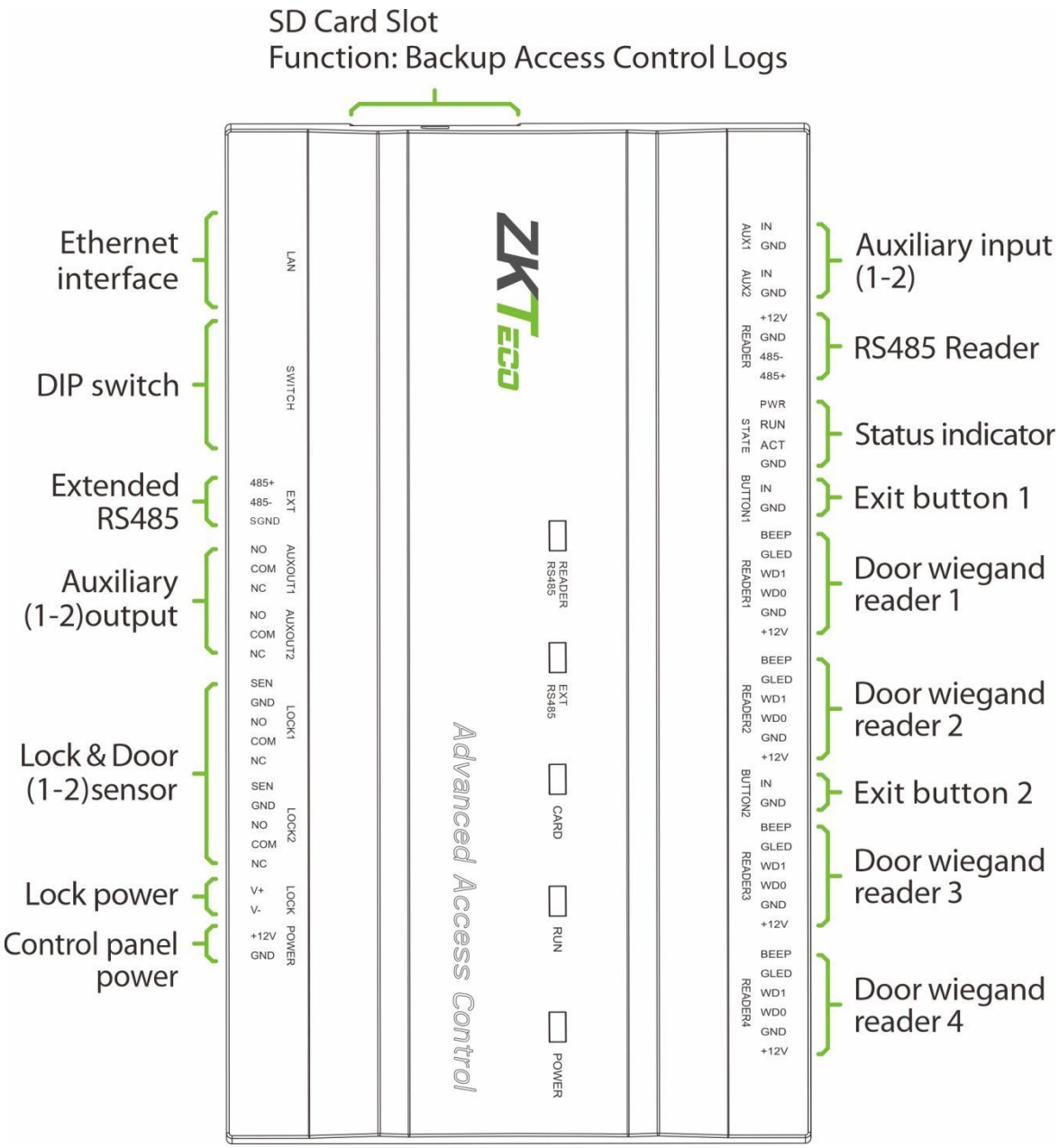


Figure 4-2 InBio260 Pro Plus terminal description

4.1.3 InBio460 Pro Plus

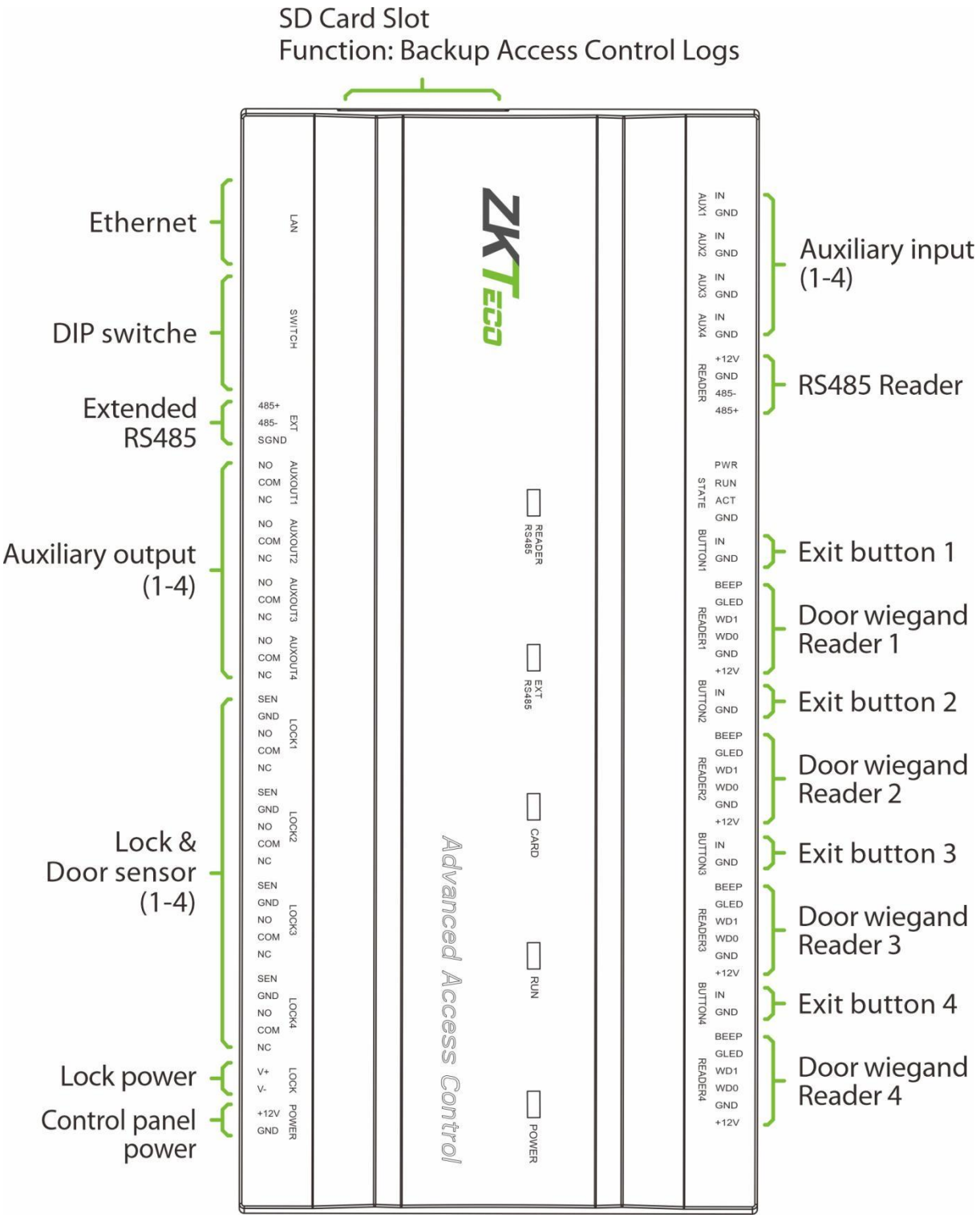


Figure 4-3 InBio460 Pro Plus terminal description

Description of the terminals:

1. The auxiliary input may connect to infrared body detectors, fire alarms, or smoke detectors.
2. The auxiliary output may connect to alarms, cameras or doorbells, etc.
3. The RS485 Reader port can be connected externally to RS485 reader.
4. The EXT RS485 communication port can be externally connected to EX0808 expansion board (for customized function, please contact your dealer if needed).
5. The terminals above are set through the relevant access control software. Please see the respective software manual for further details.

SD card function:

Backup event records of access control for client. Supports connection of 32GB SD card.

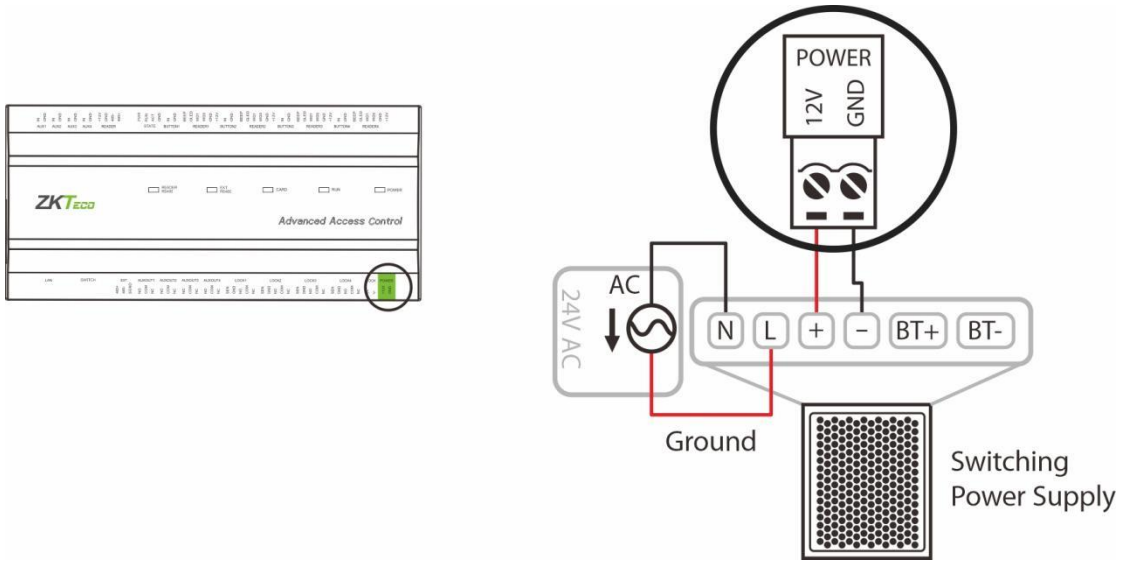
Ports of InBio160/260/460 Pro Plus Control Panel:

No.	Functional Port	InBio160 Pro Plus	InBio260 Pro Plus	InBio460 Pro Plus
1	**Number of doors controller**	1	2	4
2	**Wiegand card reader interface**	2	4	4
3	**Exit button**	1	2	4
4	**Control lock relay**	1	2	4
5	**Door sensor**	1	2	4
6	**Extension input**	1	2	4
7	**Extension output**	1	2	4
8	**TCP/IP**	✓	✓	✓
9	**RS485 extension communication**	✓	✓	✓
10	**PC485 communication**	Customization	Customization	Customization

4.2 Wiring Description

4.2.1 Power Wiring

- **Without Backup Battery**



- **With Backup Battery**

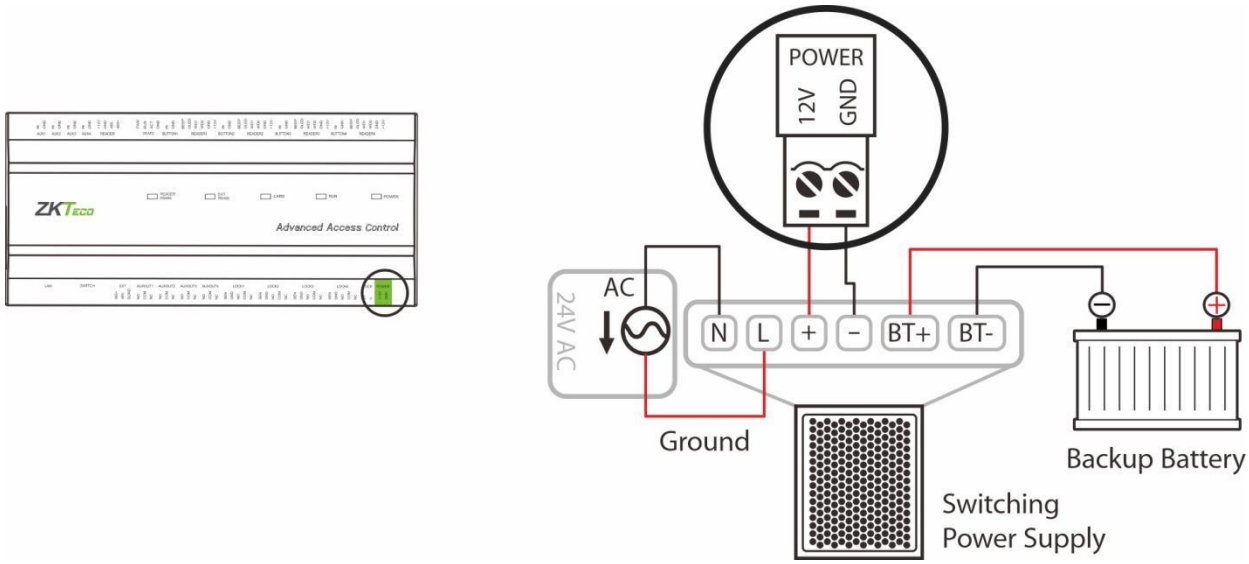


Figure 4-4 Power supply wiring diagram

4.2.2 Network Wiring

Establish the connection between the device and the software using an Ethernet cable. An illustrative example is provided below:

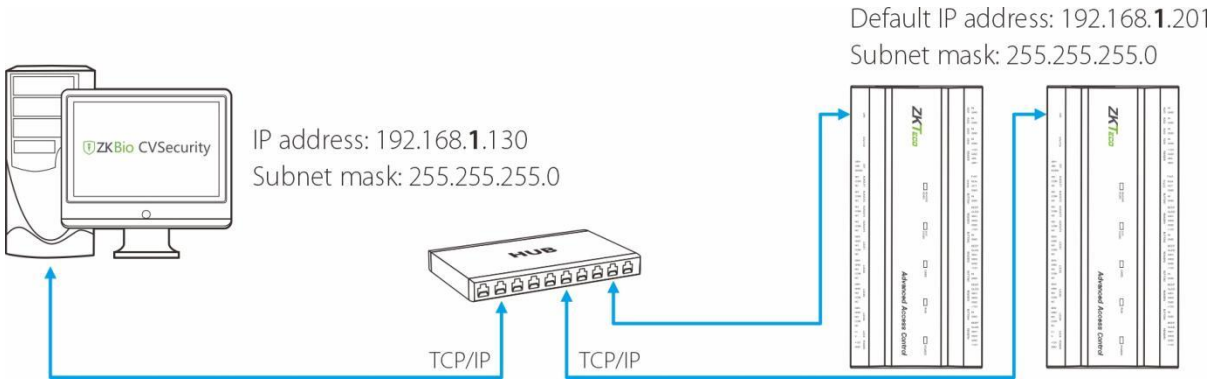


Figure 4-5 Network wiring diagram

Note:

- *In LAN, IP addresses of the server (PC) and the device must be in the same network segment when connecting to the software.*

4.2.3 Wiegand Reader Wiring

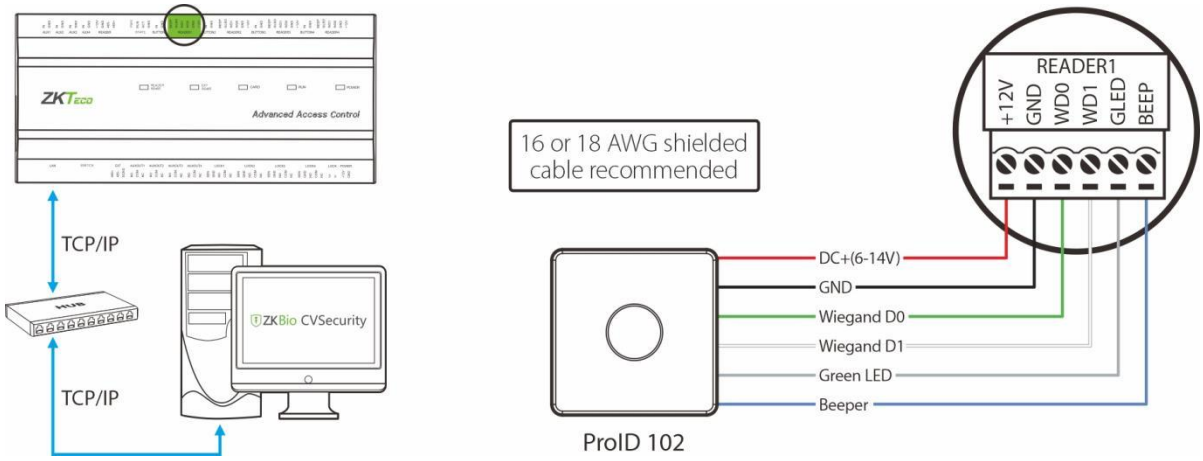


Figure 4-6 Wiegand reader wiring diagram

The InBio160 Pro Plus can connect two Wiegand readers in the one-door two-way mode. The InBio260 Pro Plus provides four readers, which can be connected in the two-door two-way mode. The InBio460 Pro Plus provides four readers, which can be connected in the two-door two-way or four-door one-way mode.

The Wiegand interfaces provided by the InBio Pro Plus series can be connected to different types of readers. If your card reader does not use the voltage of DC 12V, an external power supply is needed. A reader should be installed at a height of about 1.4m above the ground and at a distance of 30-50mm away from a door frame.

- **The following Wiegand reader models are supported for connection:**

Reader Model	Wiegand26/34	Wiegand66
KR100/101/102E/M	✓	✗
KR200/201/202E/M	✓	✗
KR310	✓	✗
KR500E/501M/502E/M/503E	✓	✗
KR600/601/602E/M	✓	✗
KR610/611/612E	✓	✗
KR610/611/612D	✓	✓
KR610/611/612DL	✓	✓
ProID10/20/30/40 E/M	✓	✗
ProID10/20/30/40 D	✓	✓
ProID20/30BEMD-RS	✓	✓
KR900 Series	✓	✓

Remarks: ✓ *indicates support,* ✗ *indicates no support.*

4.2.4 Auxiliary Input Wiring

The InBio160 Pro Plus provides one auxiliary input interface; the InBio260 Pro Plus provides two and the InBio460 Pro Plus provides four, which may connect to infrared body detectors, smoke detectors, gas detectors, window magnetic alarms, wireless exit switches, etc. Auxiliary inputs are set through the relevant access control software. Please refer to the relevant user manual for details. The following is an example of wiring with fire alarm only.

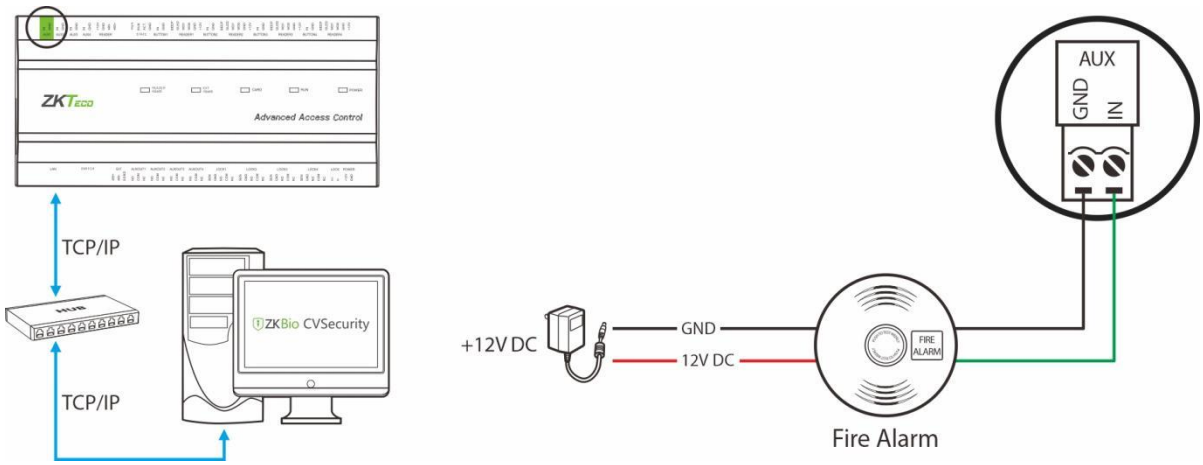


Figure 4-7 Auxiliary input wiring diagram

4.2.5 Auxiliary Output Wiring

The InBio160Pro Plus has two relays (one used as control lock by default, and the other one used as auxiliary output); the InBio260 Pro Plus has four relays (two used as control locks by default, and the other two used as auxiliary outputs); the InBio460 Pro Plus has eight relays (four used as control locks by default, and the other four used as auxiliary outputs).
The relays for auxiliary outputs may connect to monitors, alarms, doorbells, etc. Auxiliary outputs are set through the relevant access control software. Please refer to the respective software manual for details. The following is an example of wiring with alarm only.

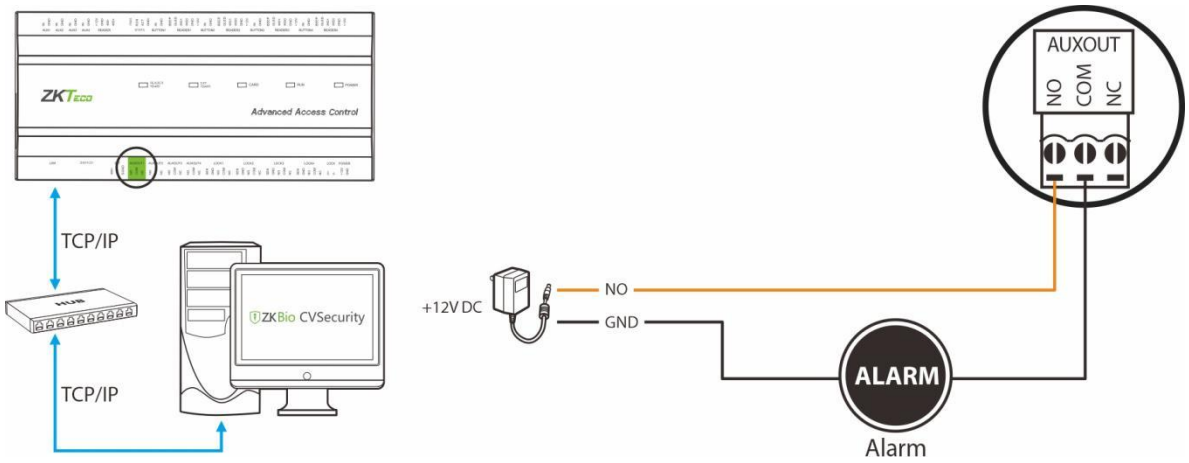


Figure 4-8 Auxiliary output wiring diagram

4.2.6 Exit Button Wiring

An exit switch is a switch installed indoor to open a door. When it is switched on, the door will be opened. An exit button is fixed at the height of about 1.4m above the ground. Ensure it is located in the right position without slant, and its connection is correct and secure. (Cut off the exposed end of any unused wire and wrap it with insulating tape.) Make sure to avoid electromagnetic interference (such as light switches and computers). It is recommended to use two-core wires with a gauge over 0.3mm^2 as the connection wire between an exit switch and the Control panel.

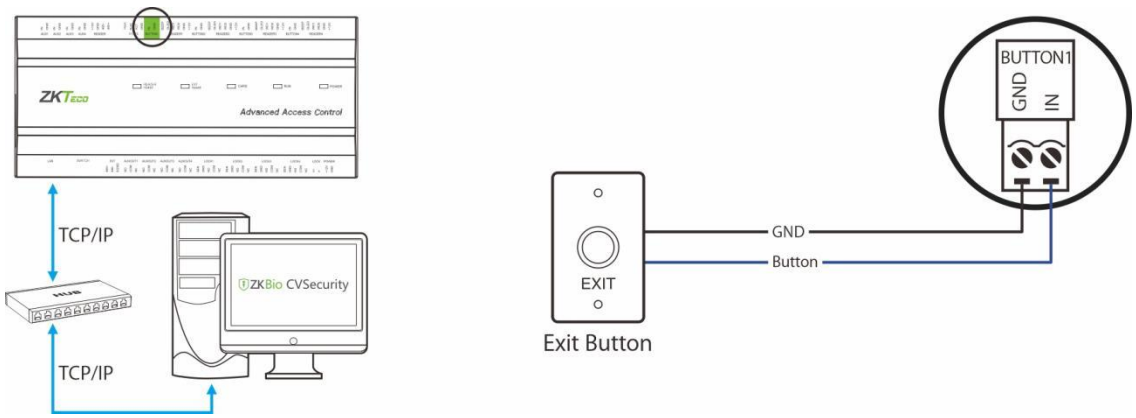


Figure 4-9 Exit button supply wiring diagram

4.2.7 RS485 Reader Wiring

The InBio160 Pro Plus can connect two RS485 readers in the one-door two-way mode. The InBio260 Pro Plus provides four readers, which can be connected in the two-door two-way mode. The InBio460 Pro Plus provides four readers, which can be connected in the two-door two-way or four-door two-way mode. **Note:** Each reader needs to be powered separately, the wiring diagram is shown below.

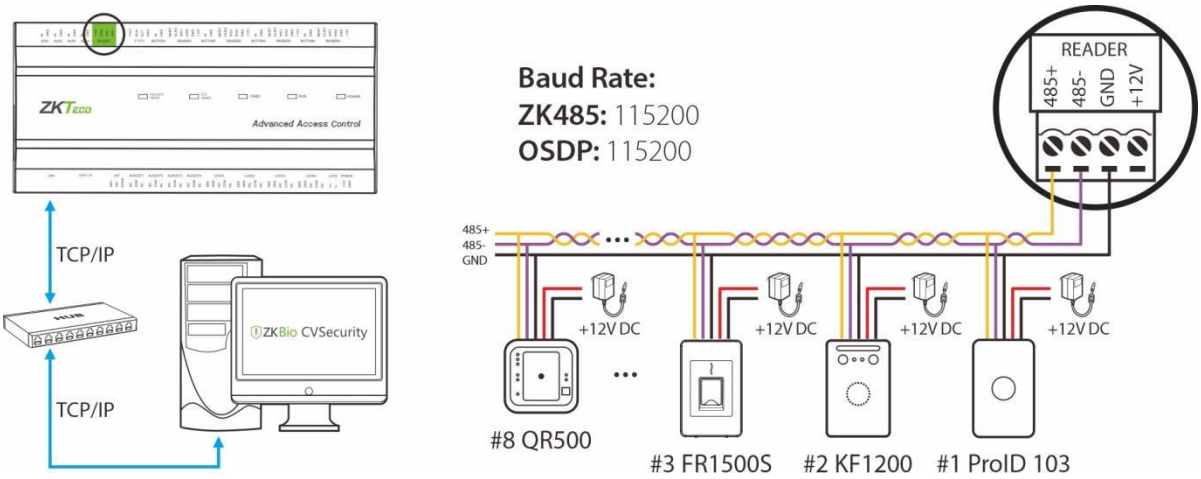


Figure 4-10 Connection between InBio460 Pro Plus and RS485 Readers

- **Controller Supported Reader Models:**

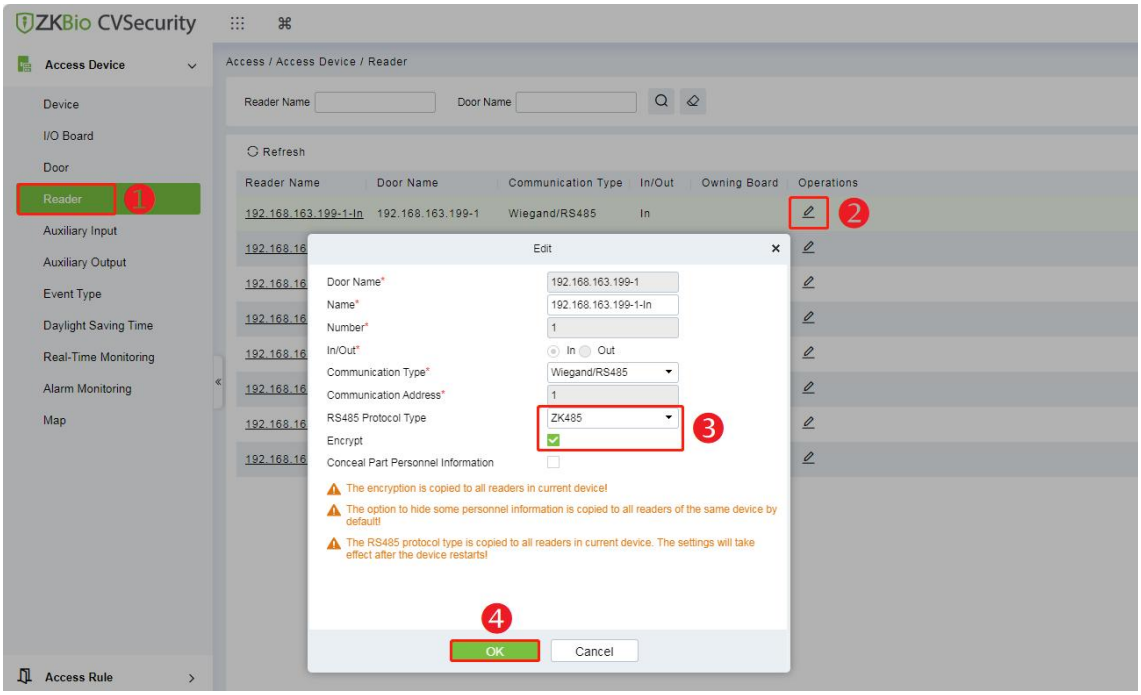
Reader Model	485 Unencrypted	485 Encryption	OSDP Unencrypted	OSDP Encryption
KF1100 Pro/KF1200 Pro	✓	✓	✗	✗
FR1200/FR1500S	✓	✓	✗	✗
ProID101/102/103/104	✓	✗	✓	✗
KR900 Series	✓	✓	✓	✓
QR50/QR500/QR600	✓	✓	✗	✗

Remarks:

1. ✓ *means connectable,* ✗ *means not connectable.*
2. *The KF1000 Pro series reader supports tamper alarm function in both encryption and unencrypted modes of 485 communication. The ProID100/KR900 reader supports the tamper function only in 485 communication encryption mode. When the reader is illegal tampering, it will send a tamper signal to the controller via 485, and the controller will report to the software to form a tamper alarm event. Users can configure the alarm linkage on the software side and connect the alarm to the auxiliary output.*
3. *The tamper switch for the ProID100/KR900 reader is on the back case of the unit. The KF1000 Pro series reader's tamper switch is located on the bottom of the unit. And when the screws on the*

bottom of the KF1000 Pro series reader are unscrewed and the tamper button is loosened, a "reader dismantle alarm" event will be generated in the real-time monitoring of the software.

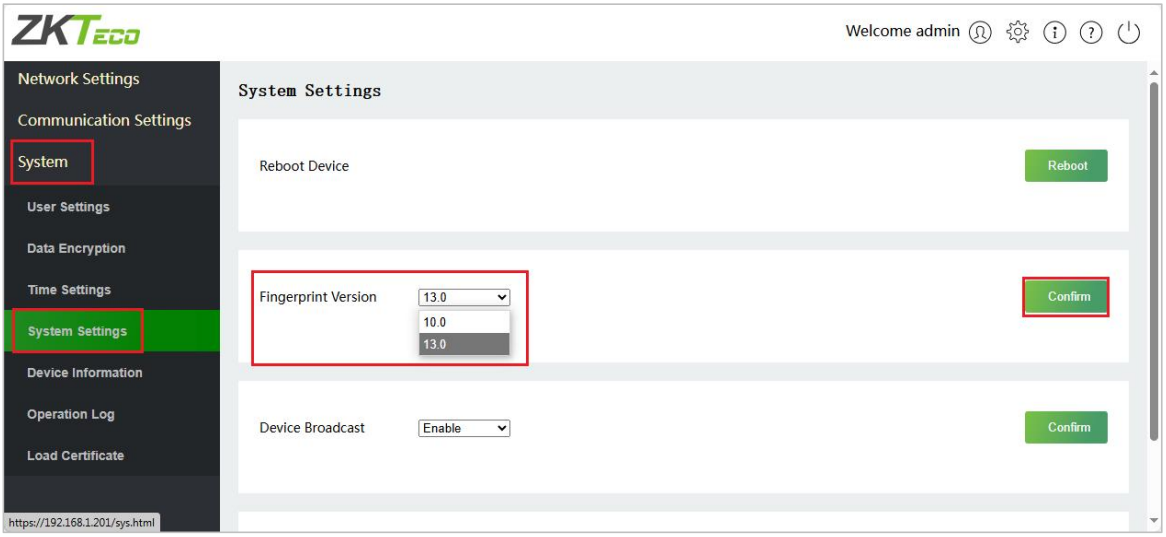
4. *On the software side, click **Access > Access Device > Reader**, select the reader and check **Encrypt** in the pop-up editing window to enable the encryption function. This is shown in the figure below.*



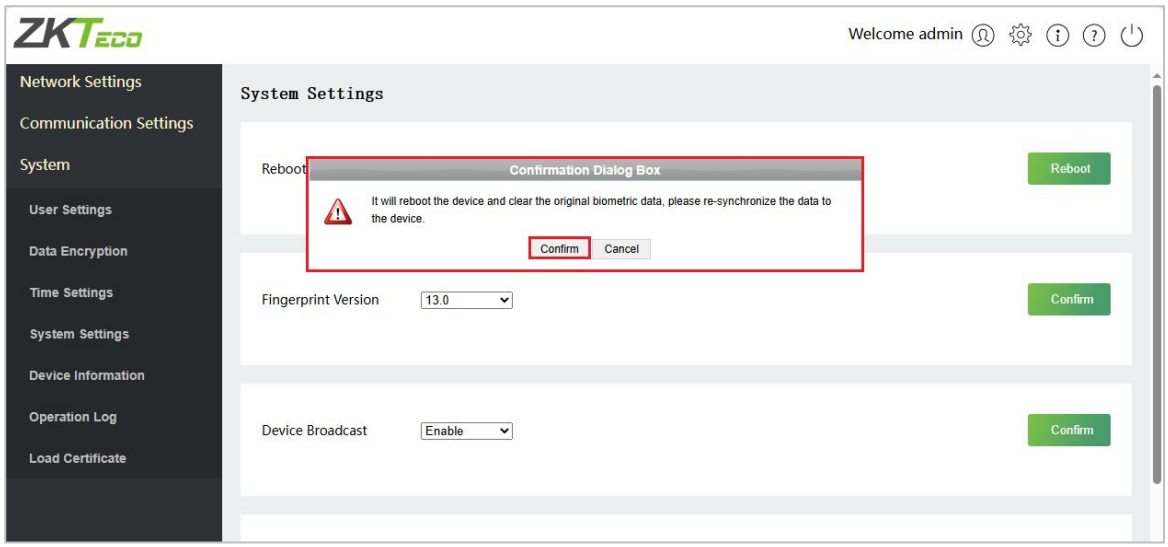
• How to switch the fingerprint algorithm version?

The InBio Pro Plus series supports ZKFingerprint V10.0 / V13.0 (default) algorithm versions. You can switch the algorithm version by logging into the Webserver as follows:

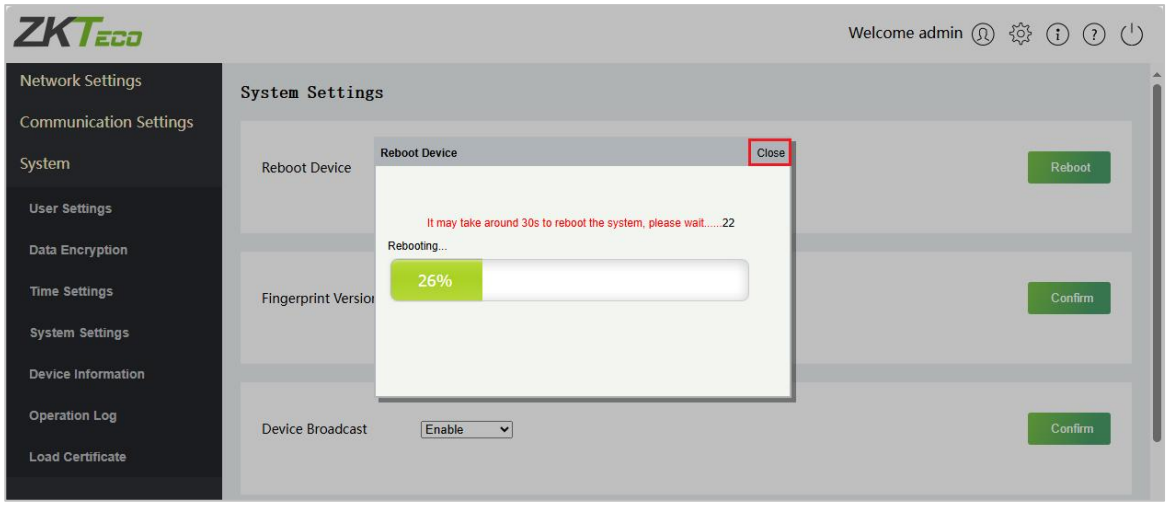
1. *Log in to the Webserver, click [**System**] > [**System Settings**] > [**Fingerprint Version**], select the algorithm version, and click [**Confirm**] to confirm.*



2. *And the interface will pop up with a prompt: **It will reboot the device and clear the original biometric data, please re-synchronize the data to the device**. Then click [**Confirm**] to confirm.*



3. *After confirming the execution, a reboot device progress window will pop up and the device will reboot after 30s, do not close the window during this period. Wait until it is finished and then click [**Close**].*



- **Setting the RS485 Address**

RS485 reader connection: Set the RS485 address (device number) of the reader by DIP switch or other ways.

RS485 address / Control Panel	1	2	3	4	5	6	7	8
InBio160 Pro Plus	#1Door IN	#1Door OUT						
InBio260 Pro Plus	#1Door IN	#1Door OUT	#2Door IN	#2Door OUT				
InBio460 Pro Plus	#1Door IN	#2Door IN	#3Door IN	#4Door IN	#1Door OUT	#2Door OUT	#3Door OUT	#4Door OUT

Important Notes:

1. RS485 communication wires should be a shielded twisted pair cable. RS485communication wires should be connected in a bus cascade topology instead of a star topology, to achieve a better shielding effect by reducing signal reflection during communications.
2. A single RS485 bus can connect up to 63 access control panels, but preferably 32 is recommended maximum.
3. To eliminate signal attenuation in communication cables and suppress interference, if the bus is longer than 200 meters, set the number **8** DIP switch to the **ON** position. The number 8 DIP switch is for setting the RS485 termination resistance. This is equivalent to a parallel connection of one 120ohm resistance between the 485+ and 485- lines.

SINGLE C3-X00 Pro Plus MULTI C3-X00 Pro Plus

4. When the EXT RS485 port is configured with ZK485 or OSDP protocol, the corresponding baud rate is set to **9600** for **ZK485** and **115200** for **OSDP**.
5. A single EXT RS485 interface can supply for maximum 750 mA (12V) current. So the entire current consumption should be less than this max value when the readers share power with the panel. For calculation, please use max current of the reader, and starting current is usually more than twice of the normal work current, please consider this situation.
6. If RS485 reader is connected externally and shares the power supply with the device, it is recommended that the connection between the EXT RS485 port and the reader be no longer than 100m. Otherwise, it is recommended that using a separate power supply for the reader.
7. For some of the devices with much greater consumption, we suggest to use the separately power supplies, to make sure the steady operation.

- **External Readers Verification Status**

After the external reader is connected to the controller, the status of the buzzer and LEDs are shown below.

Items	Voice Prompt	Indicator Status	Buzzer Status
Standby Status / Online	/	Breathing light interval frequency 1s, white light on	/
Standby Status / Offline	/	Breathing light interval frequency 1s, red light on	/
Successfully verified	Voice prompt: Successfully verified	The indicator (green) lights up	The buzzer rings once.

Verification failure	Voice prompt: Failed to verify	The indicator (red) lights up briefly twice.	The buzzer sounds twice fast.
Unauthorized personnel	Voice prompt: Unauthorized	The indicator (red) briefly light three times	The buzzer sounded three times fast.
Authentication mode error	Voice prompt: Verification error	The indicator (red) long light three times.	The buzzer beeps twice fast and once long.
Combined verification timeout	Voice prompt: Combined verification timeout	The indicator (red) lights up briefly four times.	The buzzer sounded four times fast (timeout is **10** seconds).
Verification timeout	Voice prompt: Verification timeout	The indicator (red) lights up briefly four times.	The buzzer sounded four times fast (timeout is **8** seconds).

4.2.8 PC485 Extension Communication Wiring

The InBio Pro Plus series can be connected to the EX0808 expansion board via PC485. **Note:** PC software communication is a customized feature and not supported by default, please contact your dealer if you need it.

What is EX0808?

EX0808 is an extended module for controllers which is used for connecting more number of auxiliary devices.

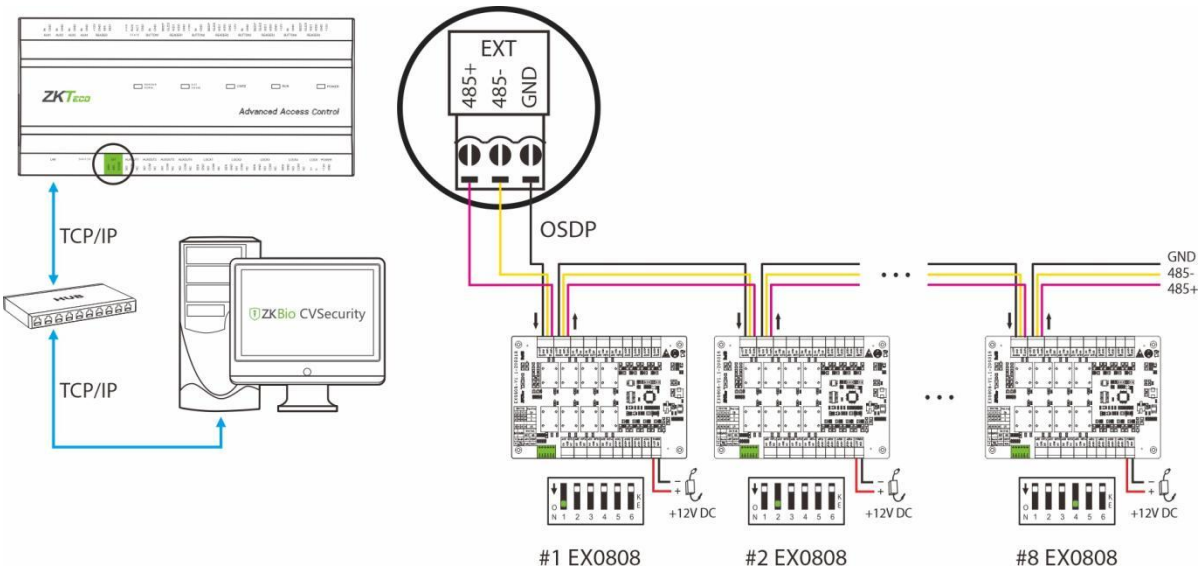


Figure 4-12 Connecting the EX0808 expansion board via PC485

Important Notes:

1. Conf igure the **ZK485** protocol through the PC485 port to connect up to eight EX0808 expansion boards to expand a certain number of auxiliary inputs and auxiliary outputs.

   Note: *Set DIP switch **#5** of the expansion board to the **OFF** position.*

2. Conf igure the **OSDP** protocol through the PC485 port to connect up to eight EX0808 expansion boards to expand a certain number of auxiliary inputs and auxiliary outputs.

   Note: *Set DIP switch **#5** of the expansion board to the **ON** position.*

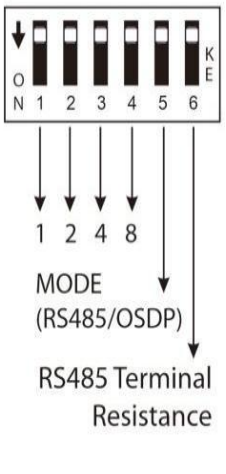
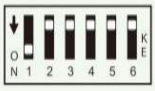
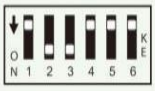
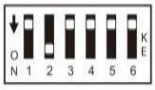
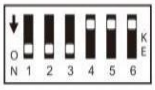
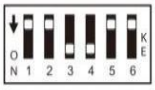
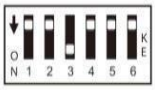
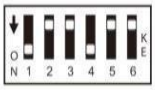
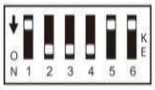
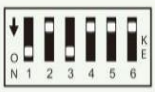
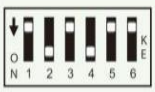
3. The RS485/OSDP address of each EX0808 is set via the DIP switch before power is applied.
4. Each EX0808 requires a separate power supply. Up to eight auxiliary input devices and eight auxiliary output devices can be connected to one EX0808.

• DIP Switch Setting for RS485/OSDP Communication

There are six DIP switches on the EX0808 expansion board and their functions are:

1. Switches 1-4 are used to set the RS485/OSDP addresses.
2. Switch **5** is for RS485/OSDP mode switching. When set to **OFF**, RS485 mode is used, and when set to **ON**, OSDP mode is used.
3. If the cable length is more than 200 meters, the switch **6** should be **ON** for noise reduction on long RS485 cables.
4. The detailed settings of the DIP switches are shown in the table 4-1 below.

Table 4-1 - DIP Switch Setting for RS485/OSDP Communication

Description	RS485 Address	DIP Switch	RS485 Address	DIP Switch	RS485 Address	DIP Switch
	1		6		11	
	2		7		12	
	3		8		13	
	4		9		14	
	5		10		15	

4.2.9 Door Sensors Wiring

A Door Sensor is used to sense the open/close status of a door. With a door sensor switch, an access control panel can detect the unauthorized opening of a door and will trigger the output of alarm. Moreover, if a door is not closed within a specified period after it is opened, the door control panel will also raise the alarm. It is recommended to select two-core wires with a gauge over 0.22 mm^2. A door sensor can be omitted if it is unnecessary to monitor the open/closed status of a door, raise the alarm when the door is not closed for a long time, monitor if there is unauthorized access, and use the interlock function.

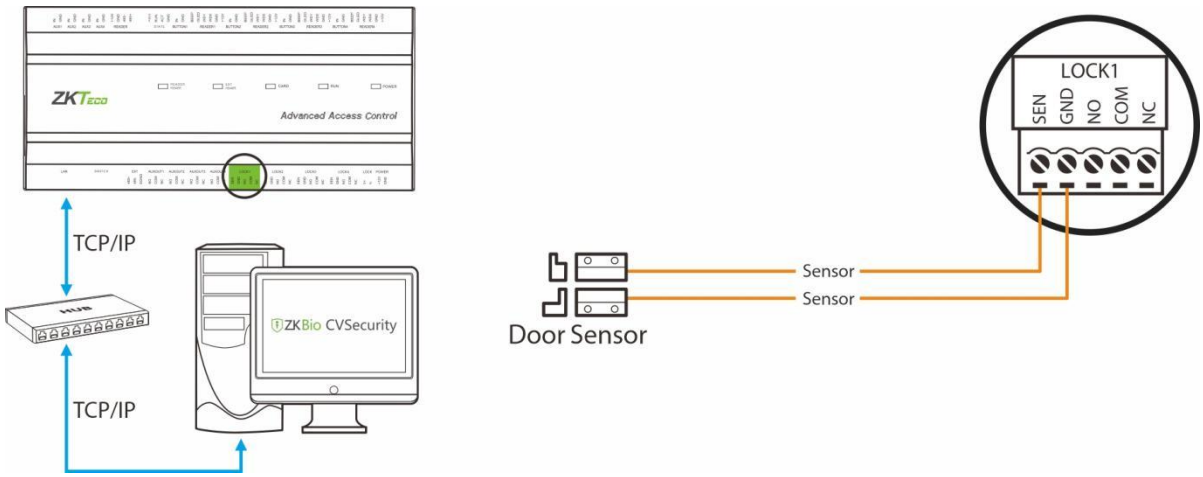


Figure 4-13 Door sensors wiring diagram

4.2.10 Lock Relay Wiring

The InBio160 Pro Plus has one lock relay, the InBio260 Pro Plus has two lock relays, and the InBio460 Pro Plus has four lock relays.

1. An access control panel provides multiple electronic lock outputs. The COM and NO terminals apply to the locks that are unlocked when power is connected and locked when power is disconnected. The COM and NC terminals use the locks that are locked when power is connected and unlocked when power is disconnected.
2. To protect the access control system against the self-induced electromotive force generated by an electronic lock at the instant of switching off/on, it is necessary to connect a diode in parallel (please use **FR107** delivered with the system) with the electronic lock to release the self-induced electromotive force during the onsite connection for application of the access control system.
3. In general, the default connection mode of the door lock is "Dry Mode". Dry mode supports separate power supply for the door lock using an external independent power supply. Wet mode supports the door lock sharing power with the controller.

4. By setting the jumper terminal beside the lock relay, you can select the device power supply or lock power supply for the lock (that is, the wet mode or dry mode). The factory default jumper setting is **Dry Mode**.

Method of switching between wet and dry modes:

- **Dry mode jumper setting:** short 1-2 and 3-4  , and the device power supply will be used for the relay output.
- **Wet mode jumper setting:** short 2-3 and 4-5  , and the lock power supply will be used for the relay output.

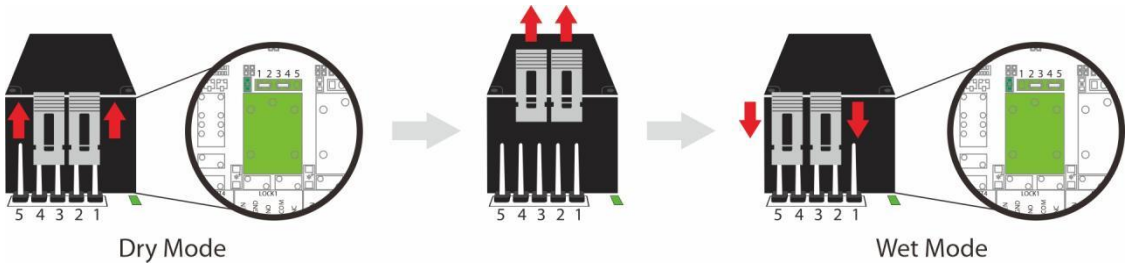


Figure 4-14 Schematic diagram for switching between wet and dry modes

- **Controller not sharing power with the lock (Dry Connect)**

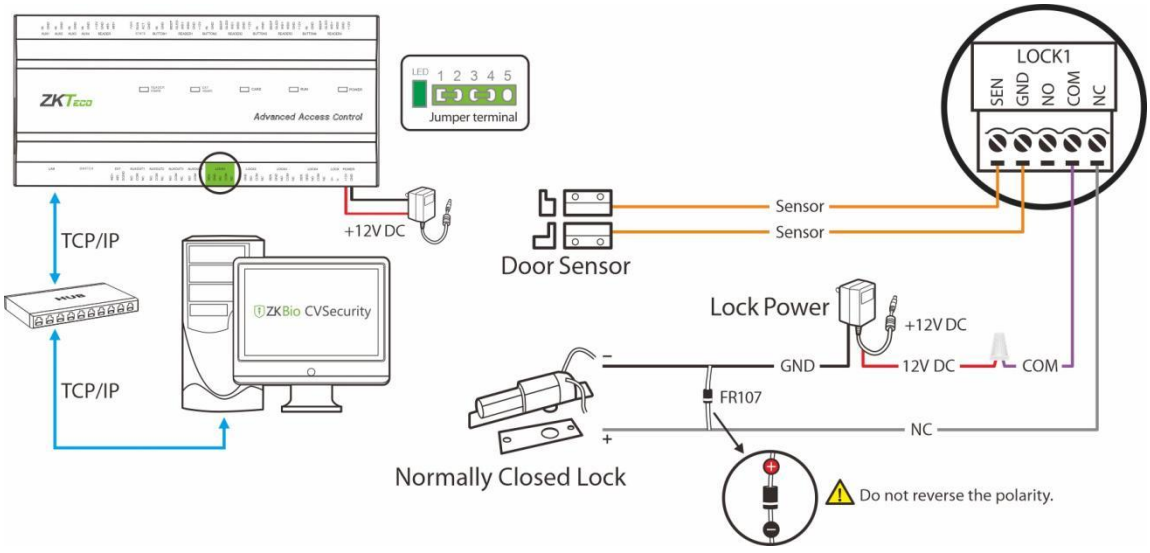


Figure 4-15 Schematic diagram of the controller not sharing power with the lock

- **Controller sharing power with the lock (Wet Connect)**

The system supports both **Normally Opened Lock** and **Normally Closed Lock**. The **NO LOCK** (normally opened at power on) is connected with '**NO**' and '**COM**' terminals, and the **NC LOCK** (normally closed at power on) is connected with '**NC**' and '**COM**' terminals.

Normally Opened Lock Powered From Lock Terminal:

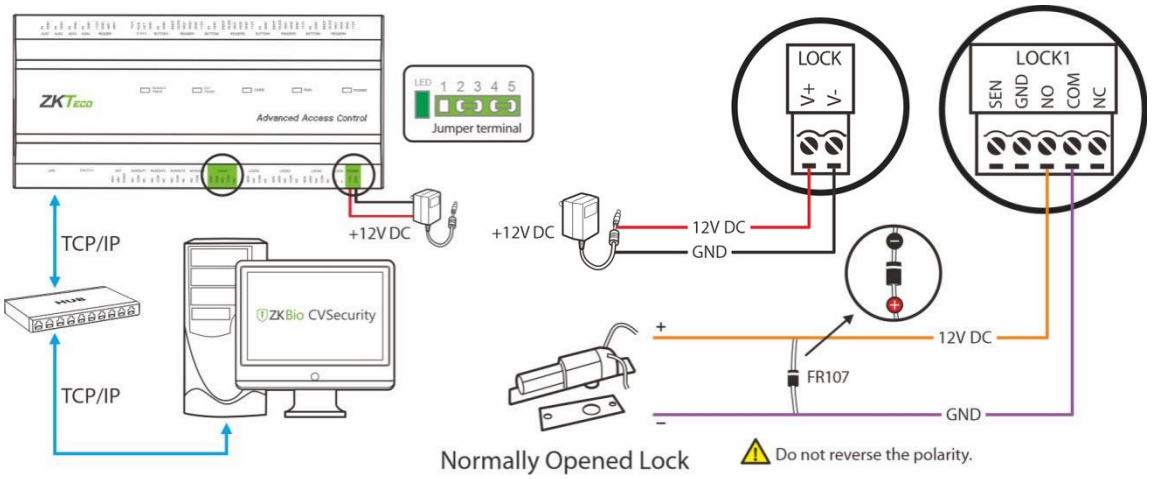


Figure 4-16 Schematic diagram of the controller sharing power with the NO Lock

Normally Closed Lock Powered From Lock Terminal:

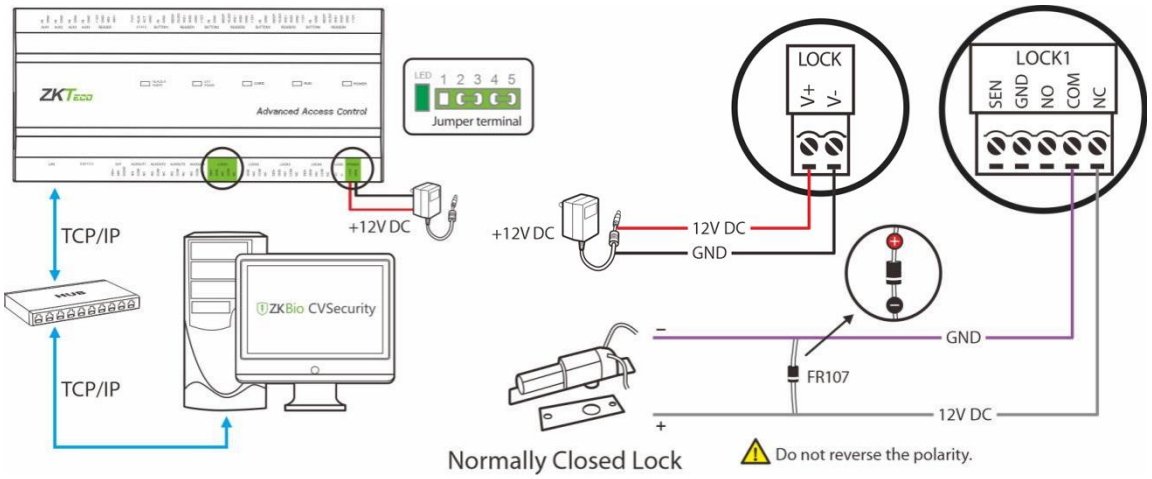


Figure 4-17 Schematic diagram of the controller sharing power with the NC Lock

Important Notes:

1. The access controller comes standard with a 12V/3A power supply, and this power supply only takes into account the power consumption of the controller itself, the output power consumption of the Wiegand reader and the RS485 reader. So usually, it is not recommended to share the power supply between the lock and the device. If you do need to share the power supply between the lock and the device, it is recommended to replace the power supply with a larger capacity, such as 12V/5A power supply. At this time, in addition to the reserved 3A current, there are 2A current can be used by the lock. If you connect our common electric lock (static loss 300mA, maximum dynamic current 500mA), you can connect up to 4 electric locks.
2. For equipment with high power consumption, it is recommended to use separate power supply to ensure stable operation of the equipment.

4.3 Connection with KF1000 Pro Series Readers

The KF1000 Pro series has three device operating modes: All-in-one mode, reader background identifying mode and face server mode. This section focuses on the reader background identifying mode and face server mode of the KF1000 Pro series.

4.3.1 KF1000 Pro Series Reader Wiring

The KF1000 Pro Series acts as a 485 reader and communicates with the InBio Pro Plus Series controller via RS-485. **Note:** Separate power supply for the reader is required. The wiring diagram is shown below.

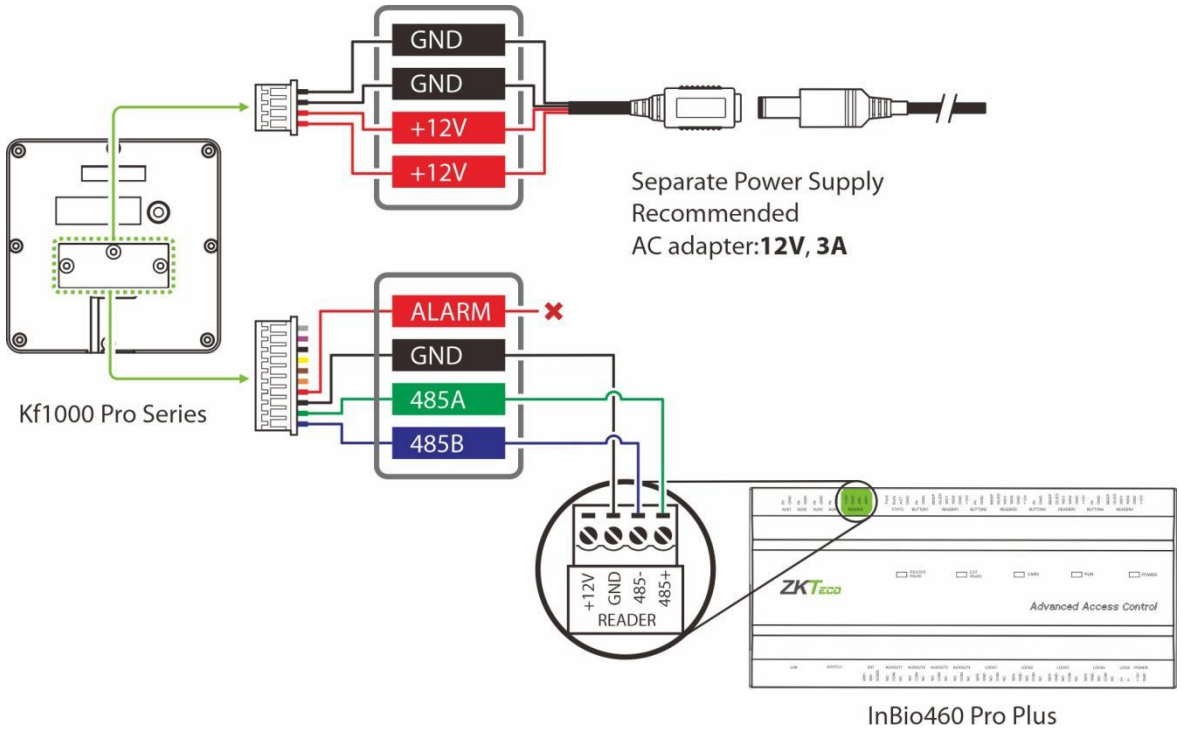


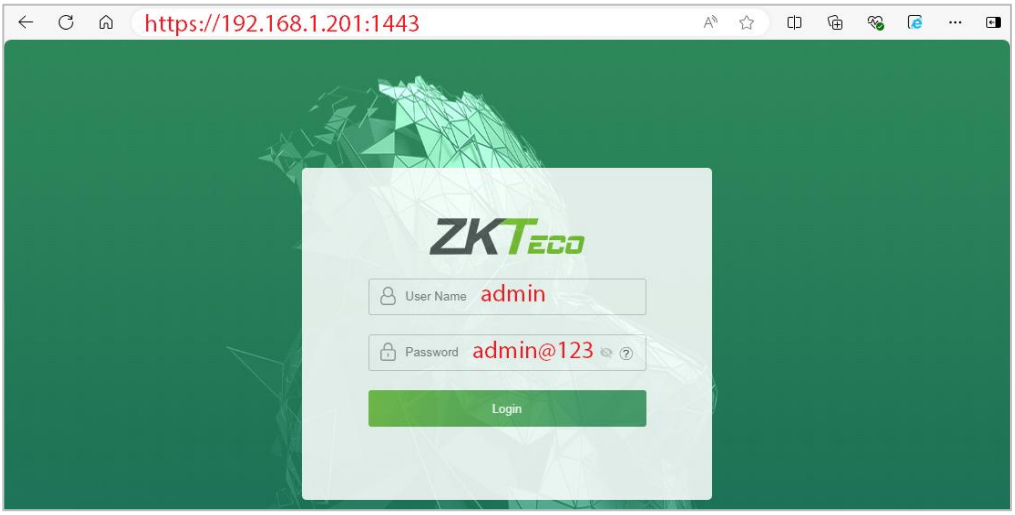
Figure 4-18 Connection between InBio460 Pro Plus and KF1000 Pro Series Reader

4.3.2 Parameter Configurations on the Webserver

1. Logging into the Webserver of the KF1000 Pro Series Reader

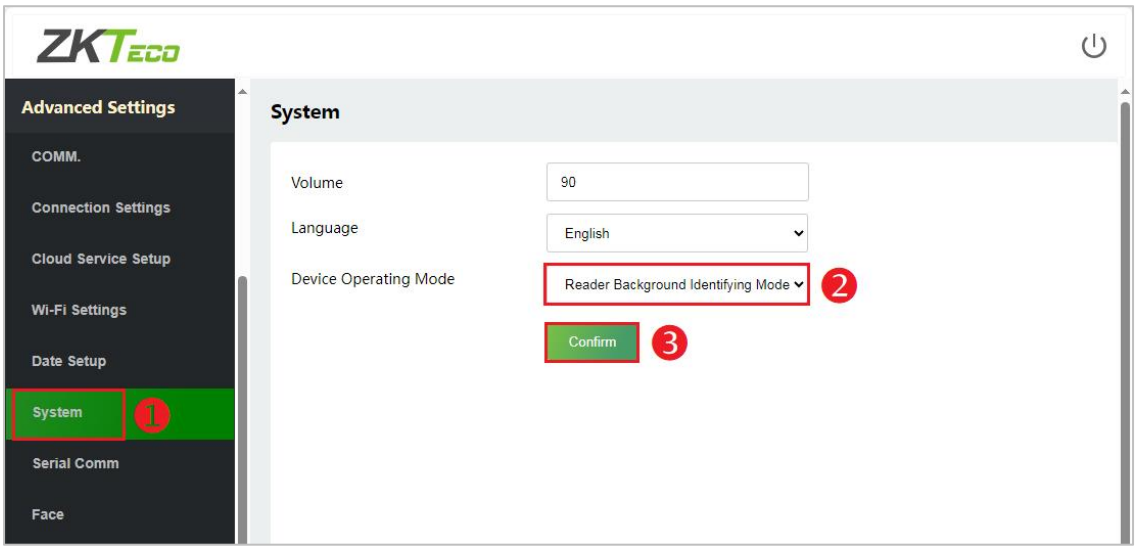
After wiring as above, connect the network cable to KF1000 Pro Series Reader. You can access the Webserver by entering the IP address in the browser. Upon the first-time login to the webserver, you will be prompted to modify the admin's password. The IP address is set as follows:

IP address: https://device's IP address:port.The default IP address is 192.168.1.201.
Port: By default, the port is **1443**. (for example: **https://192.168.1.201:1443**).
Default account and password are: **admin, admin@123**

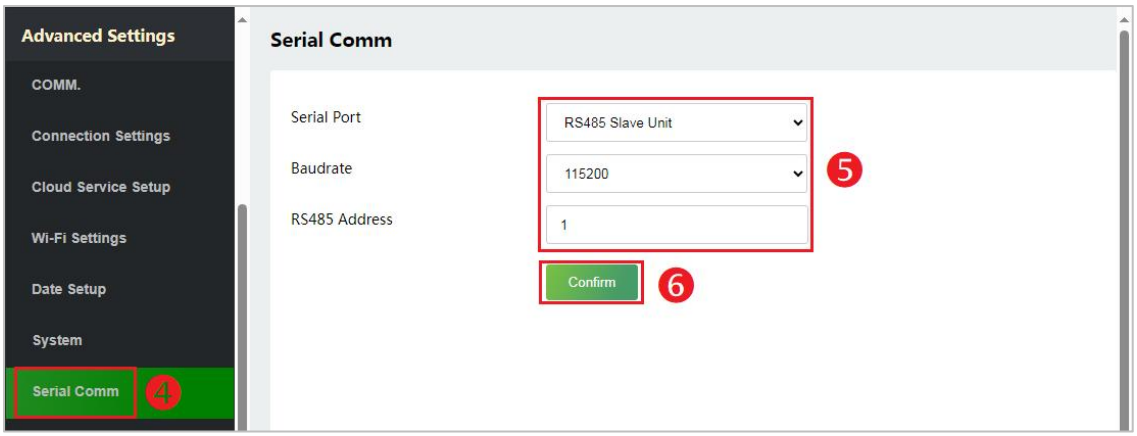


2. Setting Device Operating Mode and RS485 Communication

1） Click **Advanced Settings > System > Device Operating Mode > Reader Background Identifying Mode** in Webserver. Click **Confirm** to save.



2） Then click **Advanced Settings > System > Serial Comm** to set the serial port, baudrate and RS485 address. Click **Confirm** to save.



Serial Port: Set to **RS485 Slave Unit**.

Baudrate: The default is **115200**, which is set according to the actual configuration of the controller.

RS485 address: The 485 address of KF1000 Pro series reader.

4.3.3 Parameter Configurations on the ZKBioCVSecurity Software

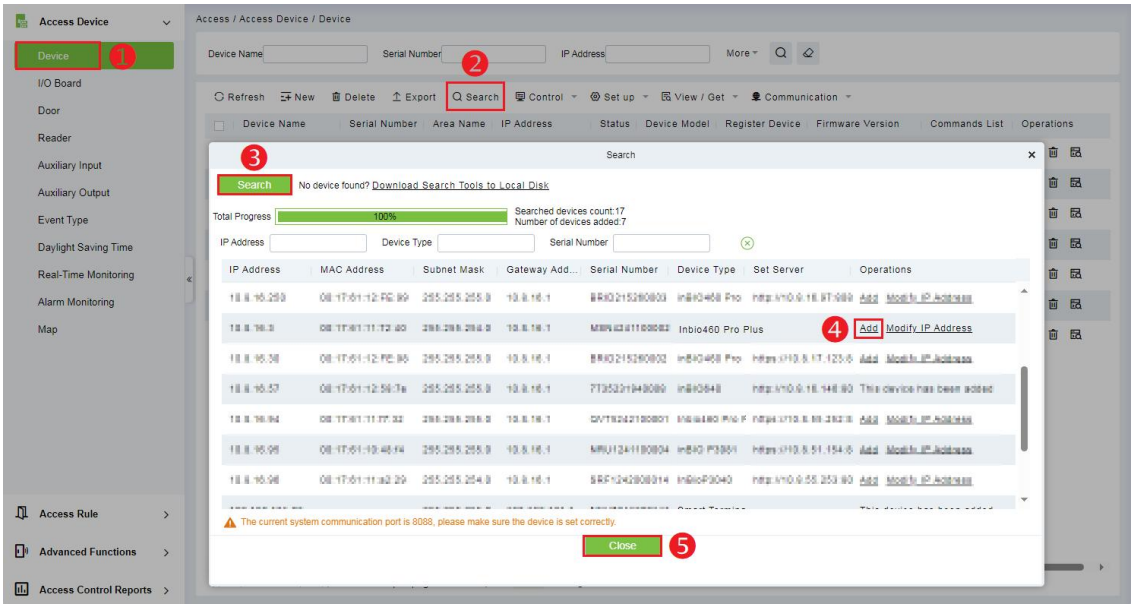
1. Add Controller on the Software

1) Click **Access** > **Access Device** > **Device** > **Search**, to open the Search interface in the software.

2) Click **Search**, and it will prompt [**Searching**……].

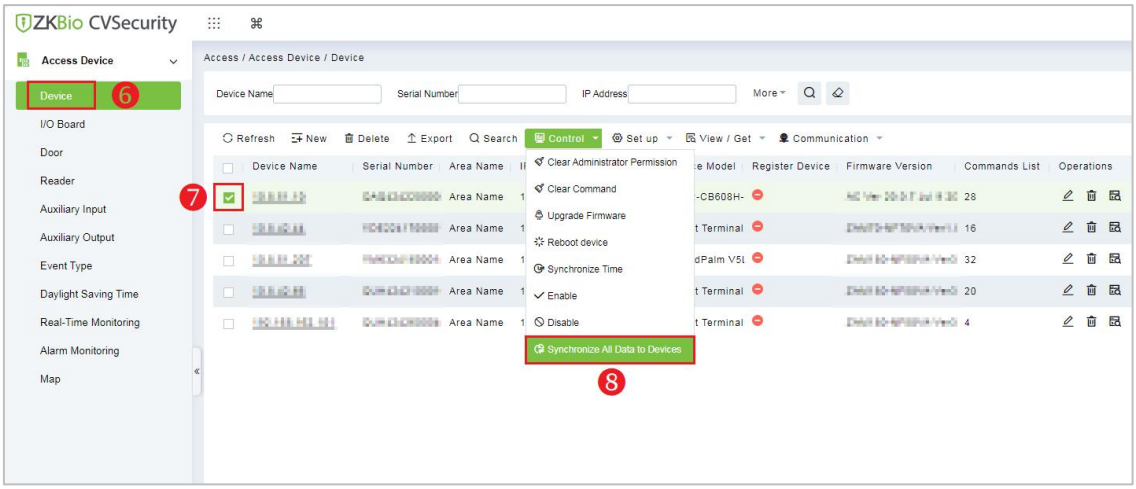
3) After searching, the list and total number of access controllers will be displayed.

4) Click **Add** in operation column, a new window will pop-up. Select Icon type, Area, and Add to Level from each dropdown and click **OK** to add the device.



5) Click **Personnel** > **Person** > **New** to register a new user.

6) Then click **Access Device** > **Device** > **Control** > **Synchronize All Data to Devices** to synchronize all the data to the device including the new users.

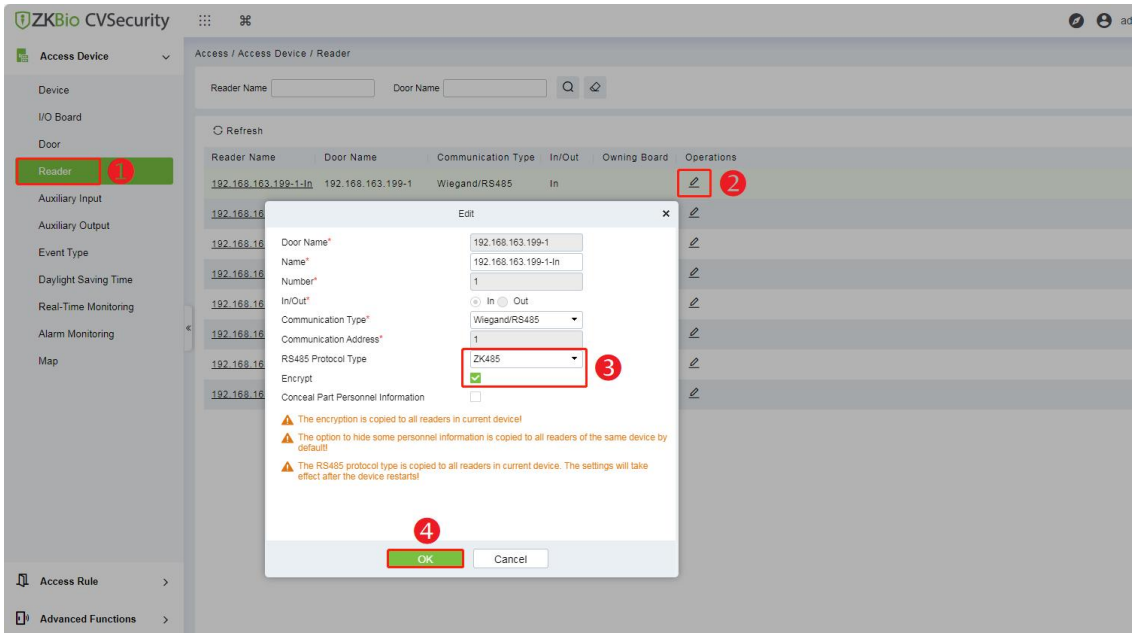


2. Add Reader on the Software and Set the RS485 Protocol Type to ZK485

1) Click **Access > Access Device > Reader** to to enter the setting interface.

2) Then select the reader and click **Edit** icon behind it to enter the editing screen.

3) Change the RS485 Protocol Type to **ZK485** and check **Encrypt**.



4.3.4 Verifying Registered Users on the KF1000 Series Reader

After the KF1000 Pro is wired according to normal RS485 wiring and the reader is configured in the software, it can communicate normally with the InBio Pro Plus controller, and the user verifies on the reader side, which supports the extraction of card number information and user face

template information, and then transmits it to the back-end controller through 485 communication for verification and opens the door according to the user's authority.

4.3.5 How to send face templates down to the controller

To enable face template functionality, follow these steps to configure the face template extraction server and transfer templates to the InBio Pro Plus controller:

1. Configure Face Template Server

- Set up the face template extraction server address in Personnel Management.
- Configure server connection parameters in the software settings.

2. User Registration Process

- Add new users to the system
- Upload user face photos through the face registration interface.
- Wait for automatic template conversion:
- Software connects to template extraction server.
- Server processes photos into face templates.
- Templates are returned to the software.

3. Access Control Configuration

- Set up appropriate access control authority groups.
- Assign user permissions and access levels.
- Synchronize user data and face templates to the InBio Pro Plus controller.

1. Wiring multiple readers to the controller

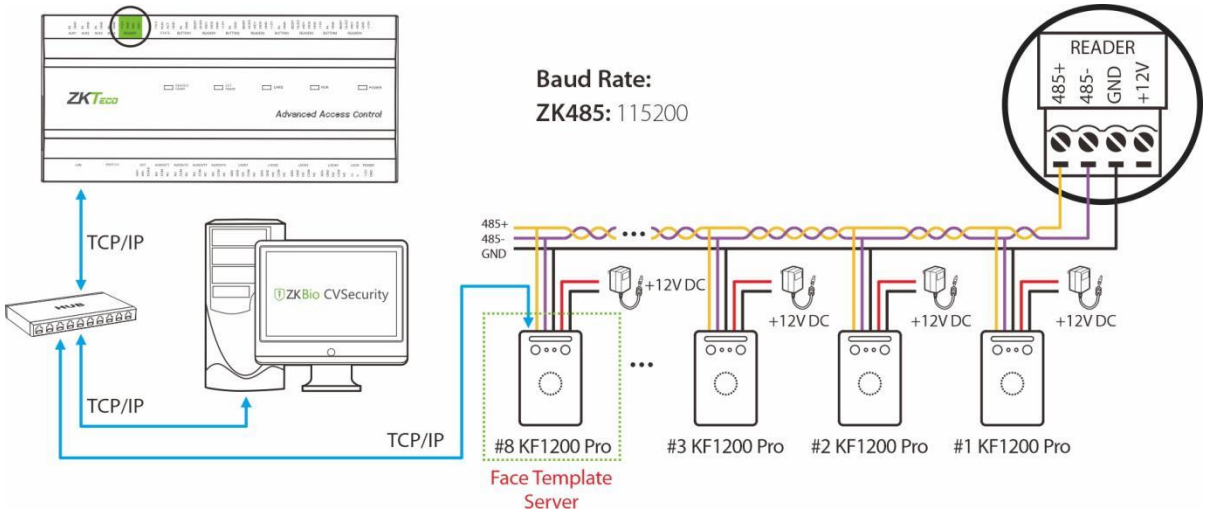


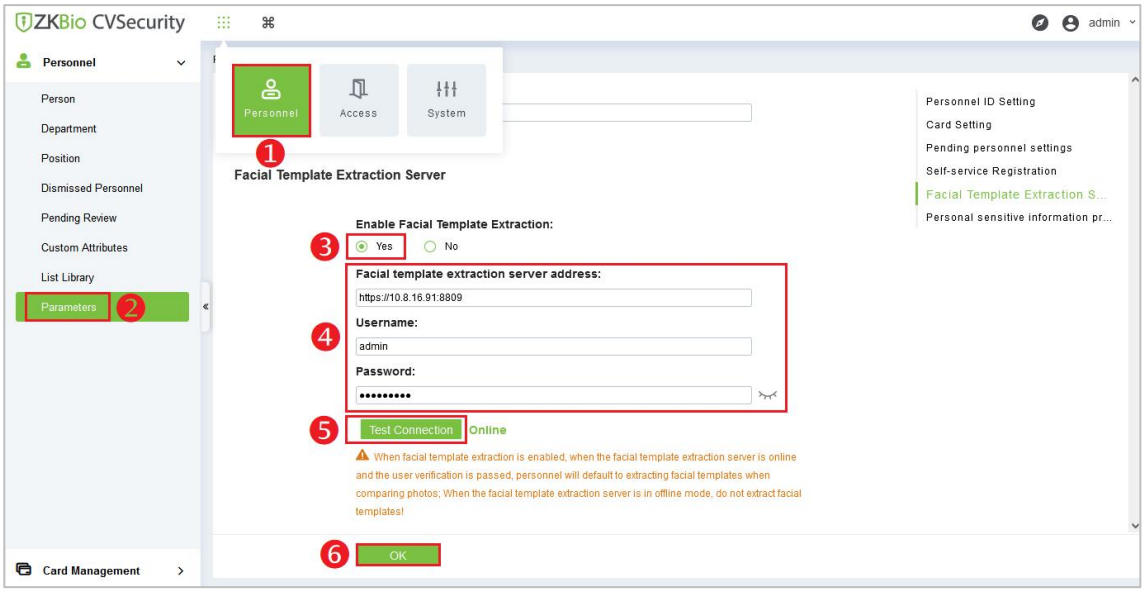
Figure 4-19 Wiring multiple KF1000 Pro series readers to the controller

Important Notes:

1. *Supplies power to each KF1000 Pro series reader individually.*
2. *You can choose any one of the readers as the converter, please plug in the network cable for it, and then follow the steps 4.3.1 to 4.3.3 to set the relevant parameters for the reader.*
3. *Then enable the **face template extraction** function for the reader.*

2. Setting the Facial Template Extraction Server

Click **Personnel > Personnel > Parameters** to enable facial template extraction.



Facial template extraction server address: Enter the server address, the default port number is **8809**.

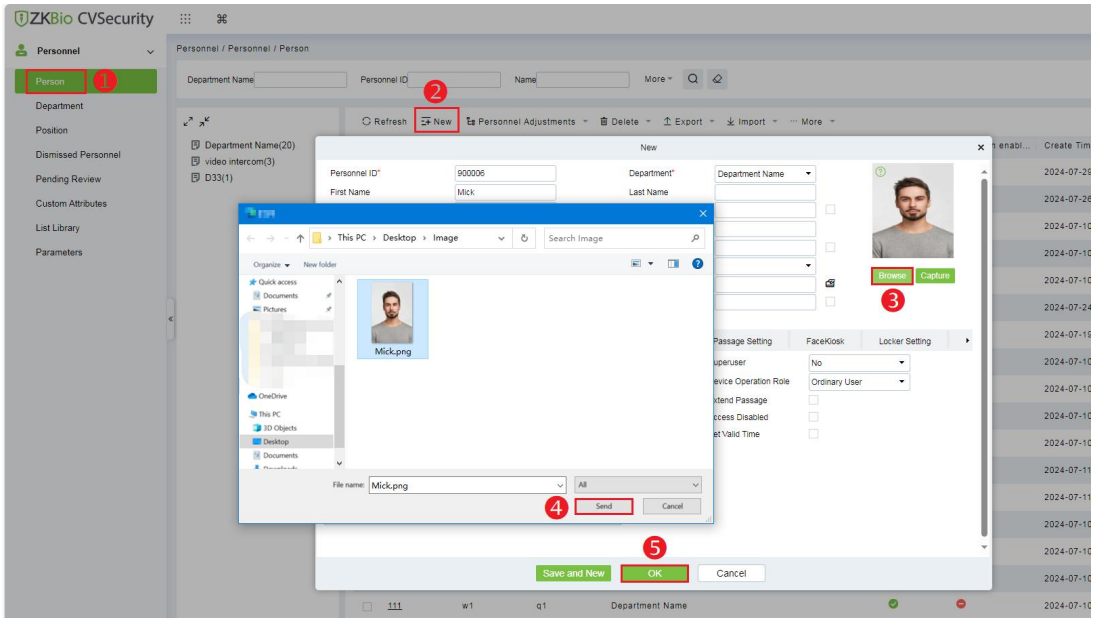
Username: Enter the Webserver user name for the KF1000 Pro series reader.

Password: Enter the Webserver password for the KF1000 Pro series reader.

3. Adding Photos to the Software

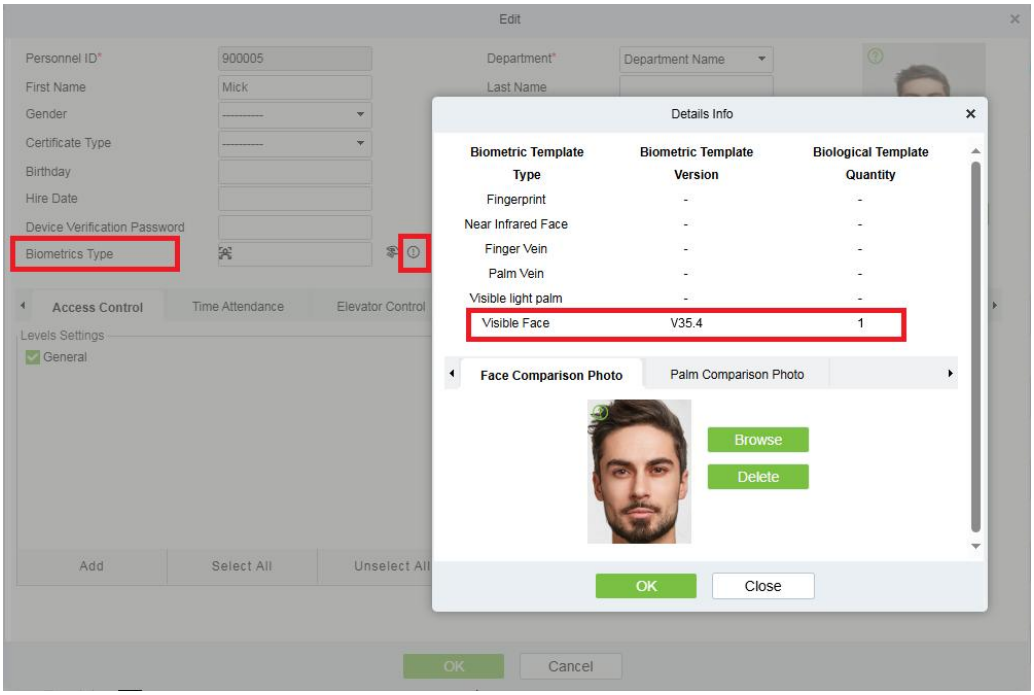
Upload a photo for the person to use to capture the face template.

1) Click **Personnel** > **Person** > **New** > **Browse** to find the photo you need to upload.
2) Thenclick **Send** to comfirm and follow the prompts.
3) After entering the person's information, click **OK** to save and exit.

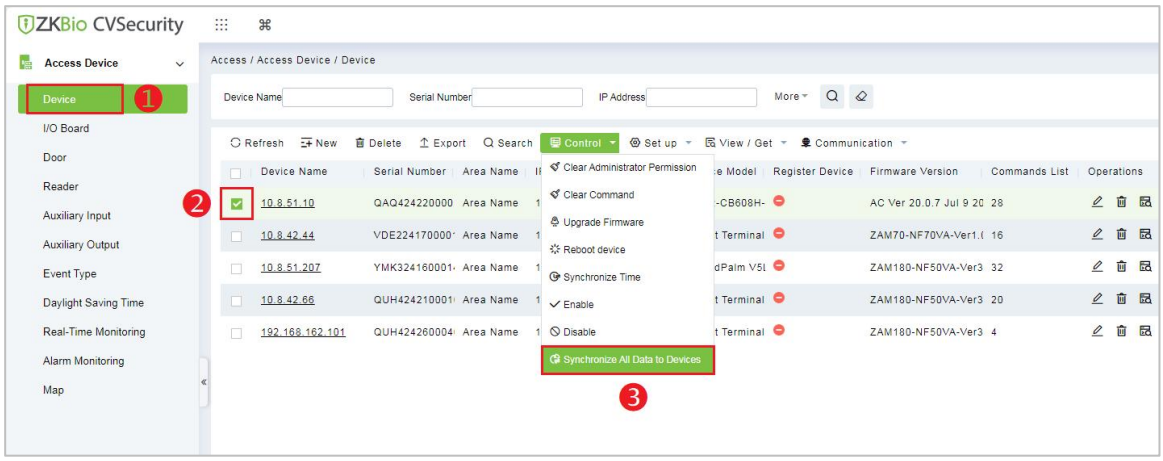


Note: *For better verification results, please make sure the photos are clear and avoid over-retouching.*

4) After the Face Template Extraction Server has converted the photo conversion to a template, click the ⓘ icon after Biometrics Type to view the template information for the person, as shown in the following figure.



5) Then click **Access Device** > **Device** > **Control** > **Synchronize All Data to Devices** to synchronize all the data to the device including the new users.

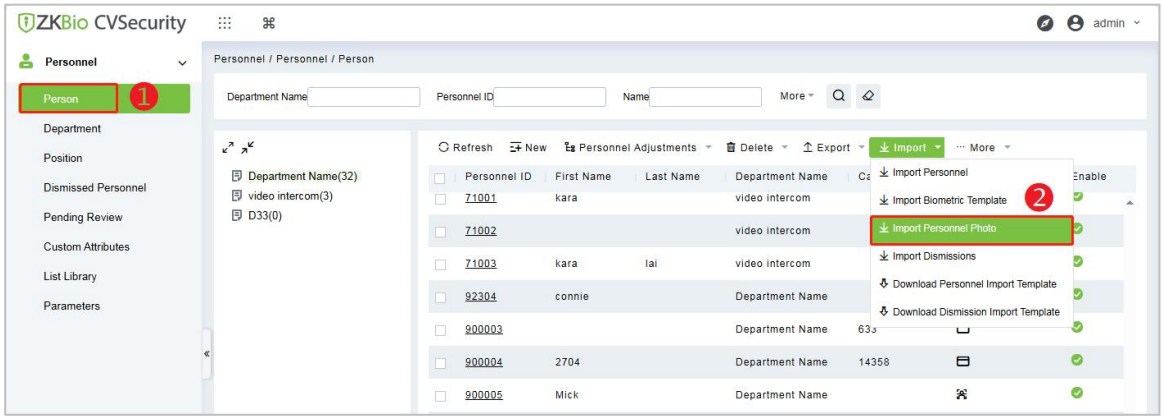


How to batch upload photos?

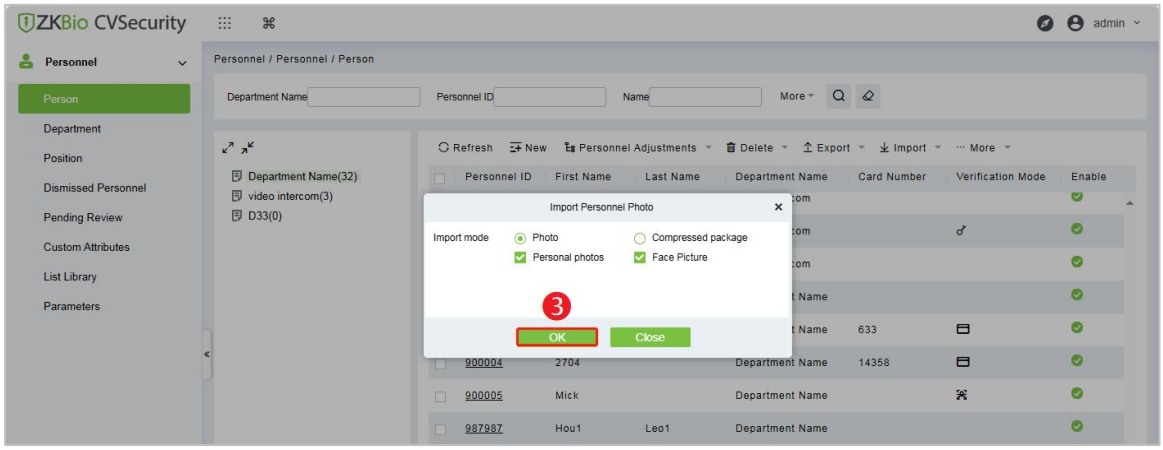
When you need to upload a large number of photos, you can batch upload photos by following the steps below.

a. *First, name the user photo file with the user ID number.*

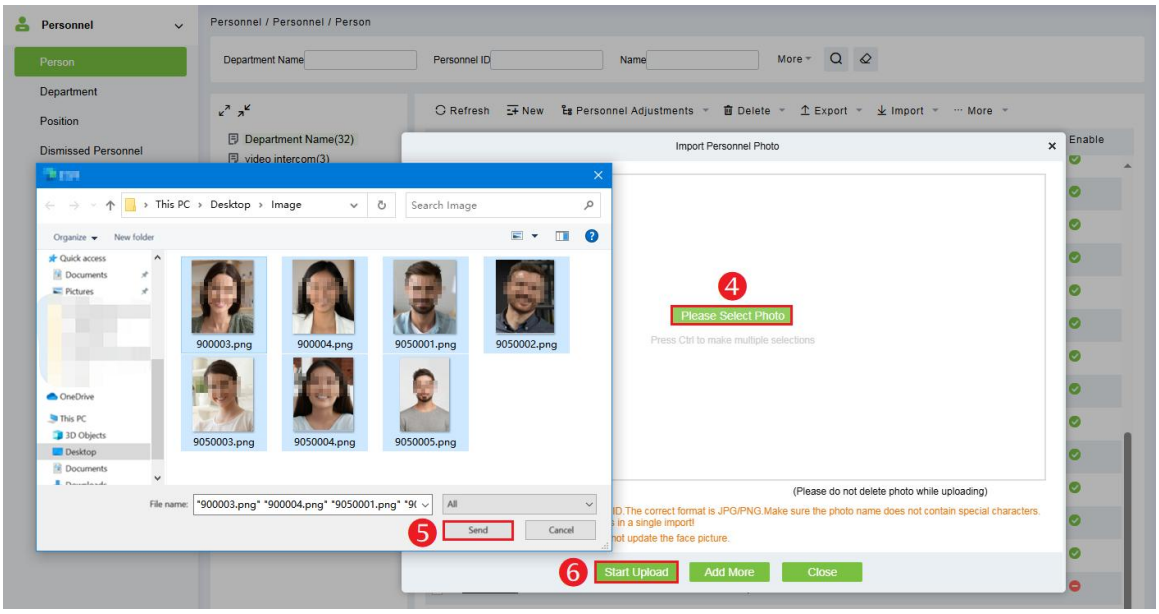
b. *Then click **Personnel** > **Personnel** > **Person** > **Import** > **Import Personnel Photo** to import photos in bulk*



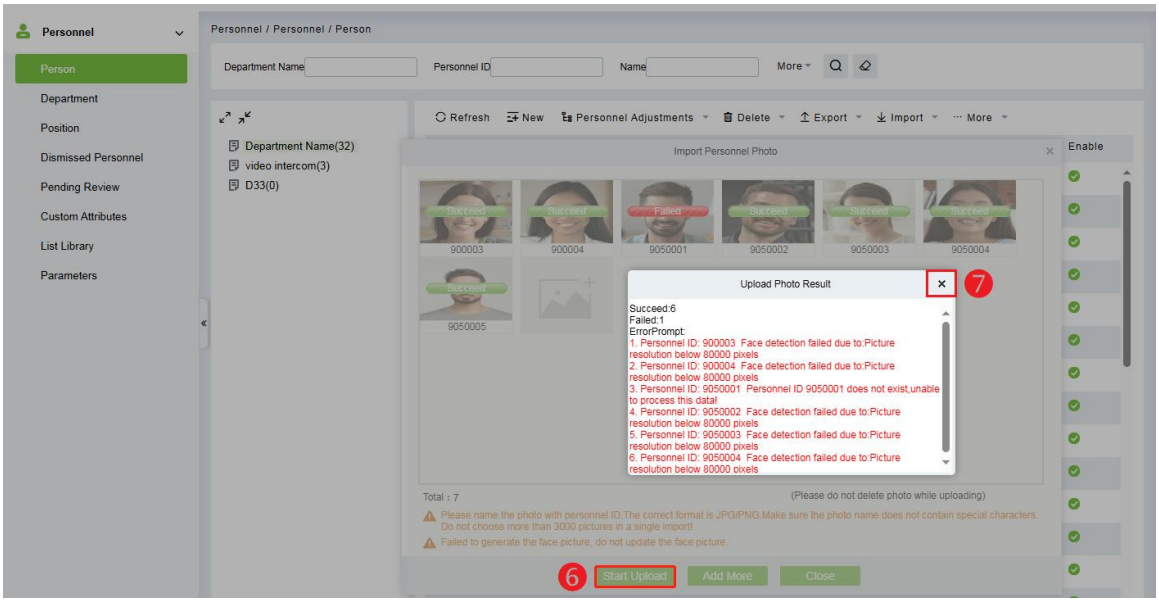
c. *Select the import mode in the pop-up window and click **OK** to confirm.*



d. *Click **Please Select Photo** to go to the folder and select all the photos you want to upload, click **Send**, and then click **Start Upload** to upload. As shown in the image below.*



e. *Once the upload is complete, the result of **Succeed** or **Failed** will be displayed on the image and a pop-up alert box will appear. Click to close it.*



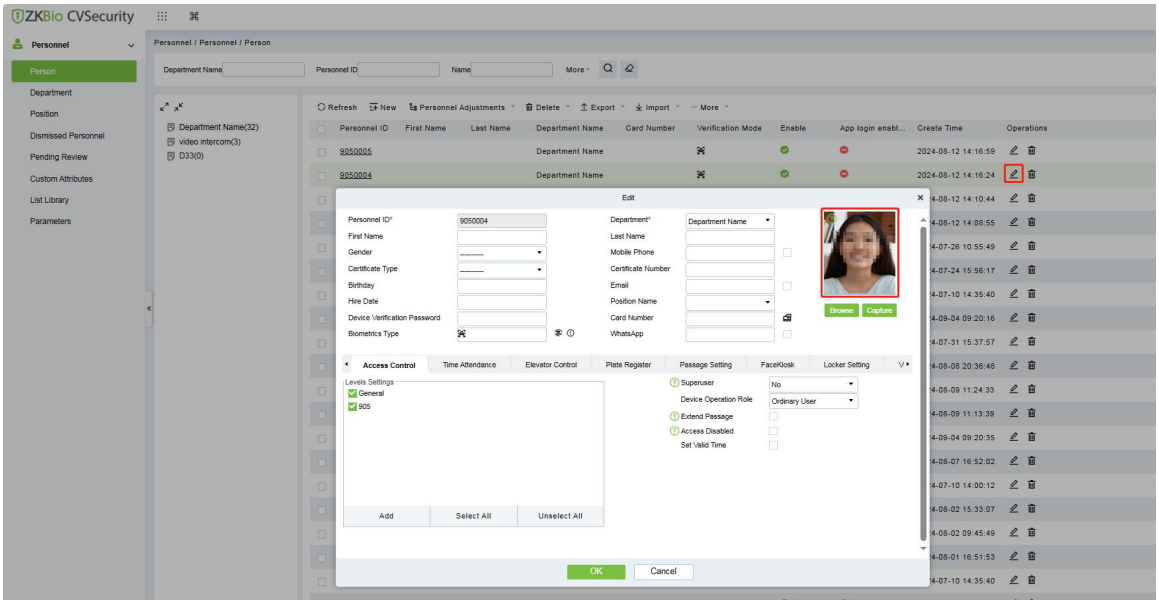
***Note:** Uploaded photos must meet the requirements and be named using the user ID. If the photo is named incorrectly, the upload will fail.*

Example Pic Comply the following requirements:

- ✓ *White background with dark-coloured apparel.*
- ✓ *Electronic photos are in JPG, PNG, JPEG file format, the recommended pixel range: 480*640 < pixel < 1080*1920.*
- ✓ *The captured person should be eyes-open and with clearly seen iris.*
- ✓ *Plain face or smile is preferred, showing teeth is not preferred.*
- ✓ *The capture person should be clearly seen, natural in color, and without image obvious twist, no shadow, light spot or reflection in face or background, and appropriate contrast*

and lightness level.

f. After successful upload, click on the icon in the person list to see the uploaded photos. It is shown in the picture below.

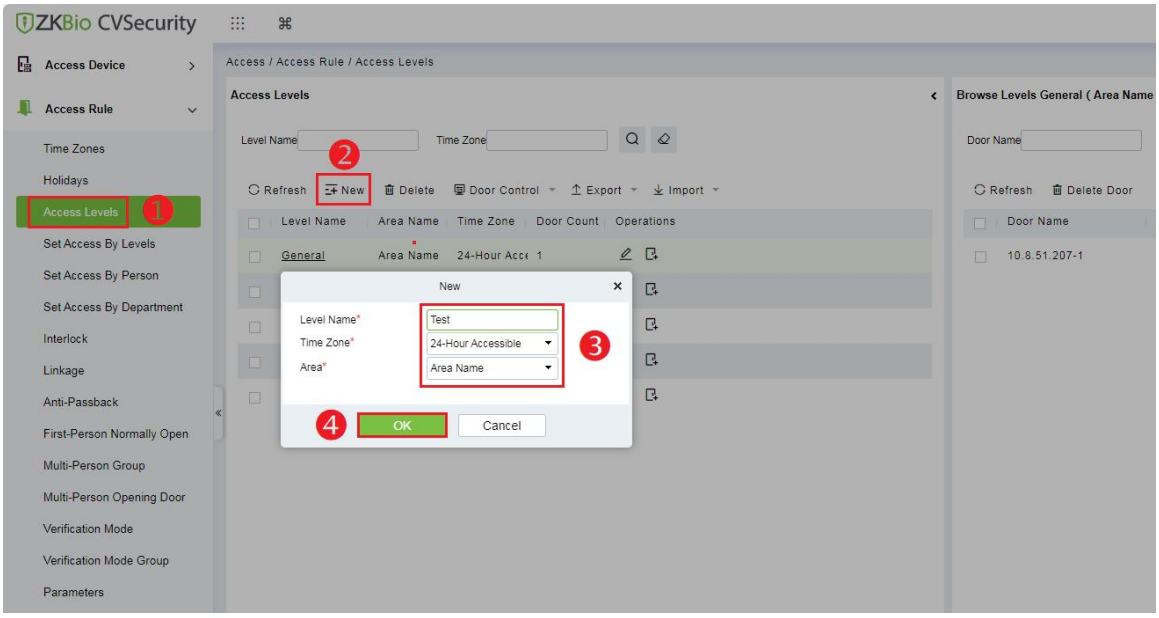


4. Set Access Levels Group

1) Click **Access** > **Access Rule** > **Access Levels** to enter the setting interface.

2) Click **New** to add a new access level group.

3) Enter the level name, time zones and setting area, then click **OK** to confirm and exit.

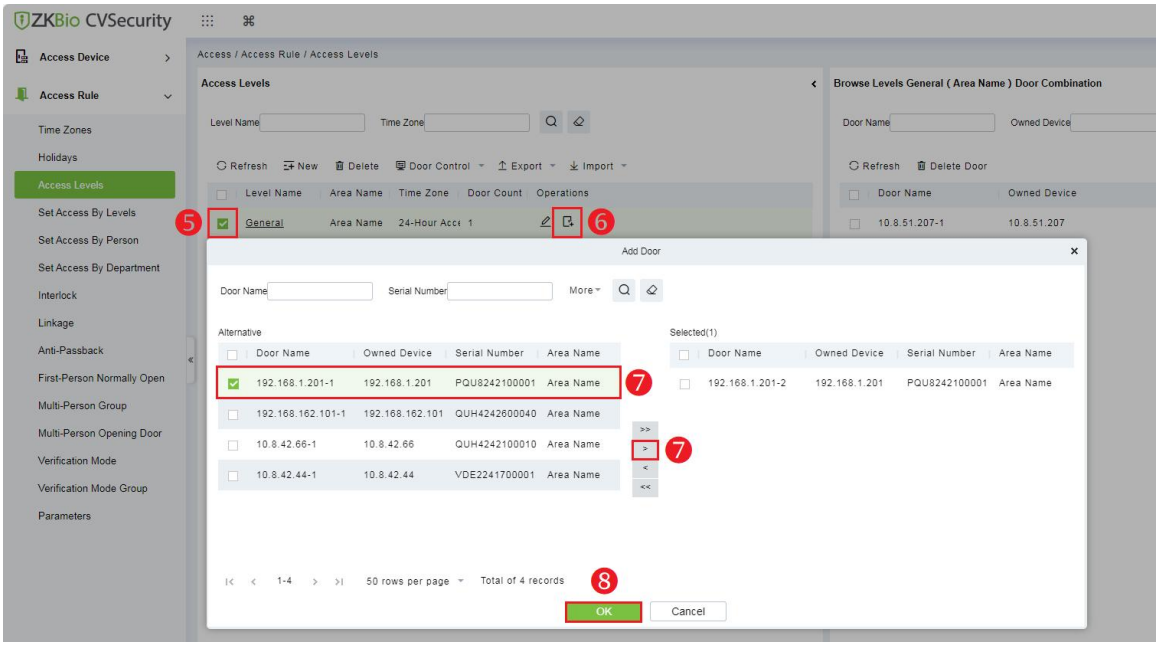


4) After adding successfully, check the levels group.

5) Click [**Add Door**] icon in the levels group bar to open the settings window.

6) Select the door and then click > to move it to the selected column on the right.

7) Click **OK** to confirm and exit.



5. Set Access By Levels

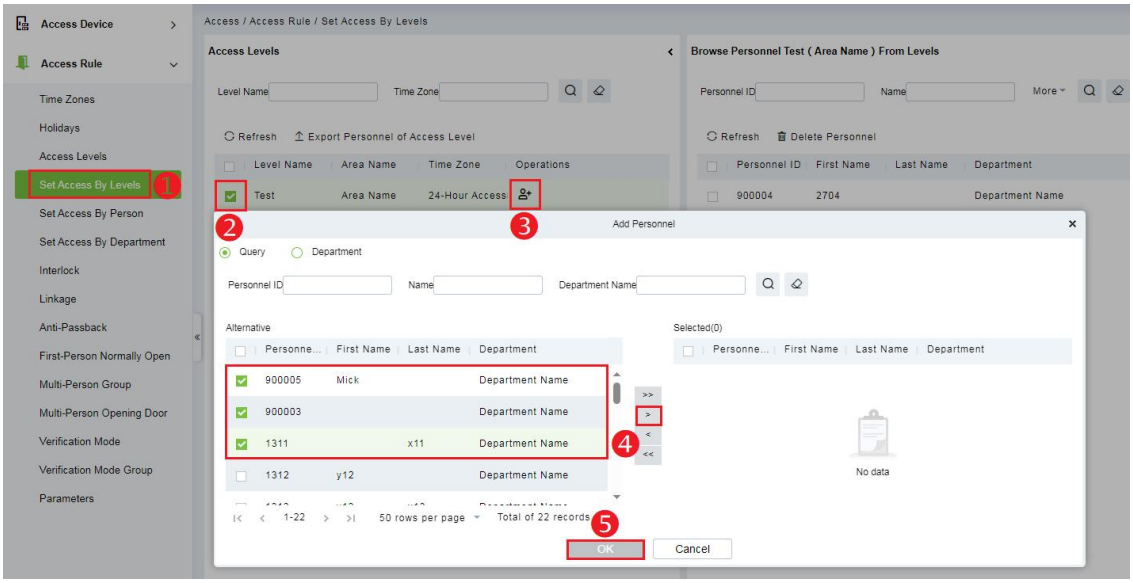
Add personnel to the elevator control level group.

1) Click **Access** > **Access Rule** > **Set Access By Levels** to enter the setting interface.

2) Check the levels group and click the [**Add Personnel**] icon in its bar to open the settings window.

3) Select the person and then click > to move it to the selected column on the right.

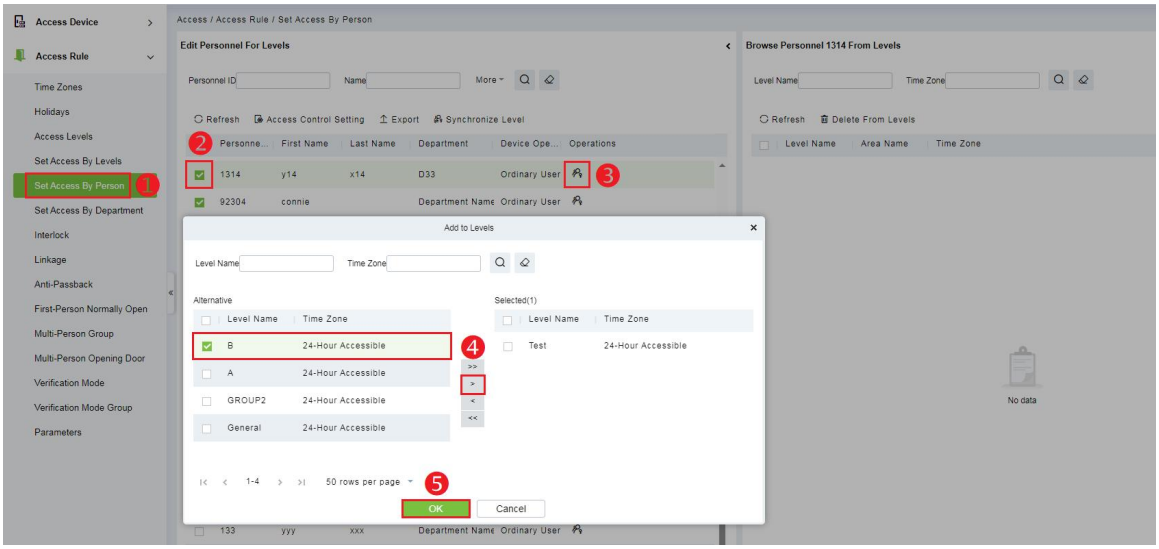
4) Click **OK** to confirm and exit.



6. Set Access By Person

Edit the access level group for personnel.

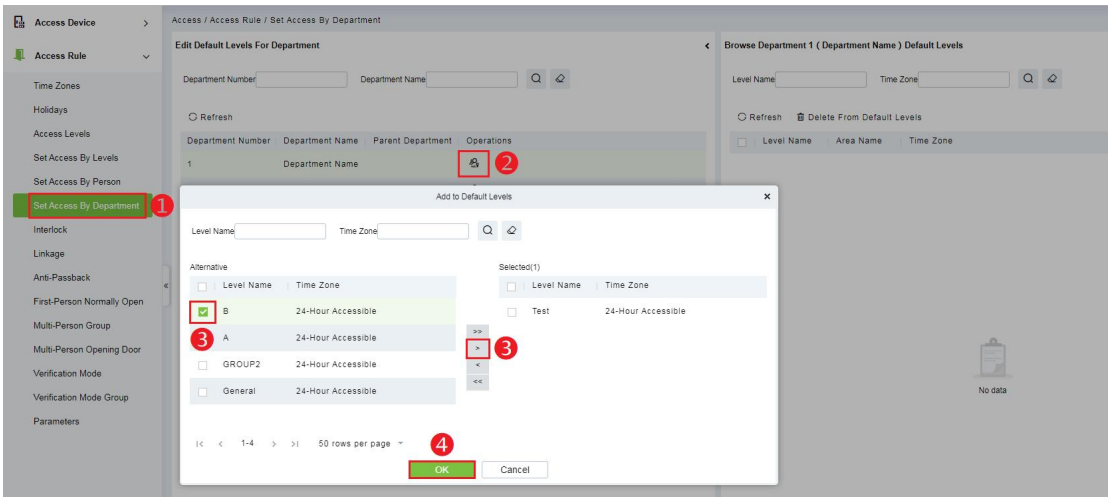
1) Click **Access** > **Access Rule** > **Set Access By Person** to enter the setting interface.
2) Check the levels group and click the [**Add to Levels**] icon in its bar to open the settings window.
3) Select the levels group and then click to move it to the selected column on the right.
4) Click **OK** to confirm and exit.



7. Set Access By Department

Edit the elevator control level group for the department.

1) Click **Access** > **Access Rule** > **Set Access By Department** to enter the setting interface.
2) Check the department and click the [**Add to Default Levels**] icon in its bar to open the settings window.
3) Select the levels group and then click to move it to the selected column on the right.
4) Click **OK** to confirm and exit.



8. Facial Recognition Matching

After completing all the parameter settings, the device completes the operation of face matching verification through the following steps.

Acquisition: The KF1000 Pro converter extracts template information from photos sent by the software and saves it to the software, which then sends it to the controller.

Comparison: KF1000 Pro collects the compared face templates directly from the camera and transmits them to the controller via 485 for comparison.

9. Response of KF1000 Pro Series Readers to InBio Pro Plus Controller

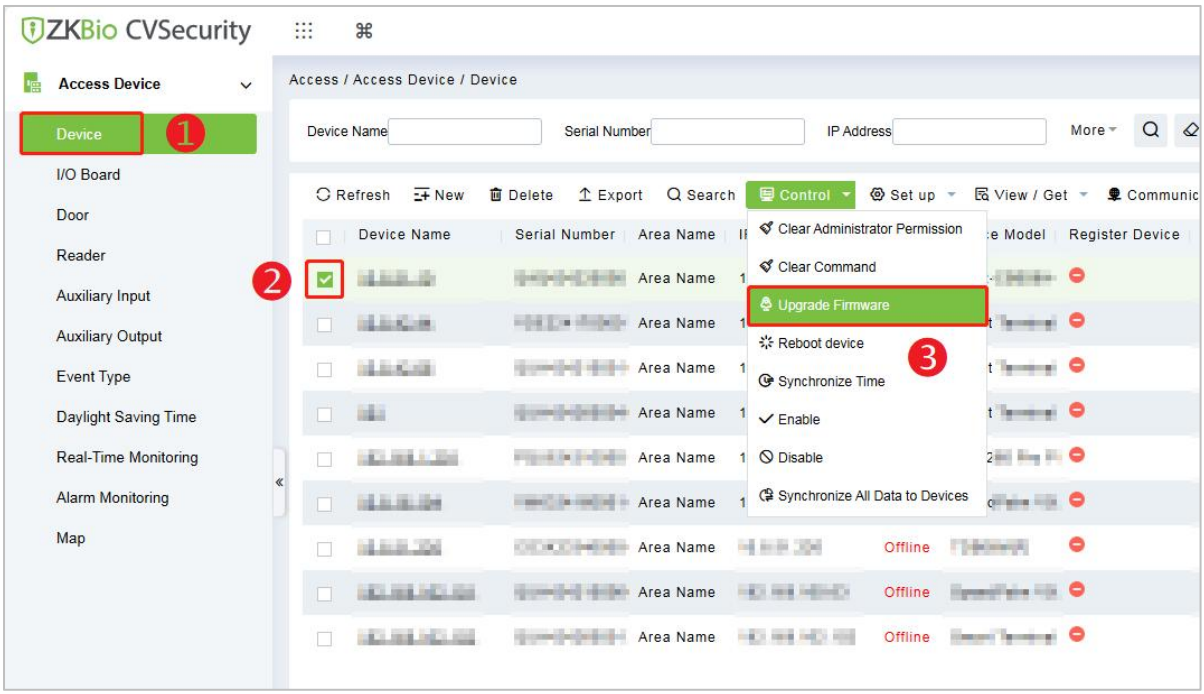
Verify Results	Real-time monitoring of events	Reader Response Effects
Reader offline	Reader offline	The voice prompts "Reader offline".
Successfully verified	Normal verification of door opening, verification within the normally open time period, first person to open the door, multiple persons to open the door, normally open time period to open the door, the super user to open the door, the background verification is successful	The voice prompts "Thank you" and the green light illuminates for **7** seconds.
Failed to verify	Person unregistered, wrong authentication method, door locked	The voice prompts "Failed to verify" and the red indicator light blinks twice.
	Personnel has expired the validity period, illegal access, door non-valid time period to verify the opening of the door, interlocking, anti-submarine, multi-people authentication failure, background authentication timeout, global anti-submarine, global interlocking, personnel validity, the number of people control	The voice prompts "Unauthorized personnel" and the red light blinks three times.

Continuing validation during combination validation		The voice prompts "Please continue to verify".
Combined verification timeout		The voice prompts "Combined verification timeout" and the red light blinks four times.
Multiplayer verification Waiting	Multiplayer verification waiting	The voice prompts "Please continue to verify".
Multiplayer verification timeout		The voice prompts "Communication abnomaly".

4.3.6 Online Firmware Upgrade

The InBio Pro Plus Series controller supports online firmware upgrades with ZKBioCVSecurity software, and synchronized firmware upgrades for downstream 485 readers.

Click **Access** > **Access Device** > **Device** > **Control** > **Upgrade Firmware** to upgrade the firmware online for the selected controller. The firmware of its downstream 485 readers will be upgraded simultaneously.



5 Equipment Communication

5.1 Access Control Networking Wires and Wiring

1. The power supply is 12V DC converted from 220V.
2. As an electronic lock has a large current, it generates a strong interference signal while functioning. To reduce such an effect, 4-core wires (RVVP 4×0.75mm^2, two for a power supply, and two for a door sensor) are recommended.
3. RS485 communication wires are made of internationally accepted shielded twisted pairs, which prove effective to prevent and shield interference.
4. The Wiegand readers use 6-core communication shielded wires (RVVP 6×0.5mm) (usually there are 6-core, 8-core, and 10-core types available for users to select according to the ports) to reduce interference during transmission.
5. Other control cables (like exit switches) are all made of 2-core wires (RVVSP 2×0.5mm^2).
6. Notes for wiring:
   - Signal wires (like network cables) can neither run in parallel with nor share one casing pipe with large-power electric wires (like electronic lock wires and power cables). If parallel wiring is unavoidable for environmental reasons, the distance must be above 50cm.
   - Try to avoid using any conductor with a connector during distribution. When a connector is indispensable, it must be crimped or welded. No mechanical force can be applied to the joint or branch of conductors.
   - In a building, the distribution lines must be installed horizontally or vertically. They should be protected in casing pipes (like plastic or iron water pipes, to be selected according to the technical requirements of the indoor distribution). Metal hoses are applicable to ceiling wiring, but they must be secure and good-looking.
   - Shielding measures and shielding connection: If the electromagnetic interference in the wiring environment is found substantial in the survey before construction, it is necessary to consider the shielding protection of data cables when designing a construction scheme. Overall, shielding protection is required if there is a large radioactive interference source or wiring has to be parallel with a large-current power supply on the construction site. Generally, shielding measures includes keeping a maximum distance from any interference source, and using metal wiring troughs or galvanized metal water pipes to ensure reliable grounding of the connection between the shielding layers of data cables and the metal troughs or pipes. Noted that a shielding enclosure can have a shielding effect only when it is grounded reliably.
   - Ground wire connection method: Reliable large-diameter ground wires in compliance with applicable national standards are needed on the wiring site and should be connected in a tree form to avoid DC loop. These ground wires must be kept far away from lightning fields. No lightning conductor can serve as a ground wire and ensure there is no lightning current through any ground wire when there is lightning. Metal wiring troughs and pipes must be connected continuously and reliably and linked to ground wires through large-diameter

cables. The impedance of this section of wire cannot exceed 2 ohms. Also, the shielding layer must be connected reliably and grounded at one end to guarantee a uniform current direction. The ground wire of the shielding layer must be connected through a large-diameter wire (not less than 2.5mm^2).

5.2 TCP/IP Communication

The Ethernet 10/100Base-T Crossover Cable, a type of crossover network cable, is mainly used for cascading hubs and switches or used to connect two Ethernet endpoints directly (without a hub). Both 10Base-T and 100Base-T are supported.

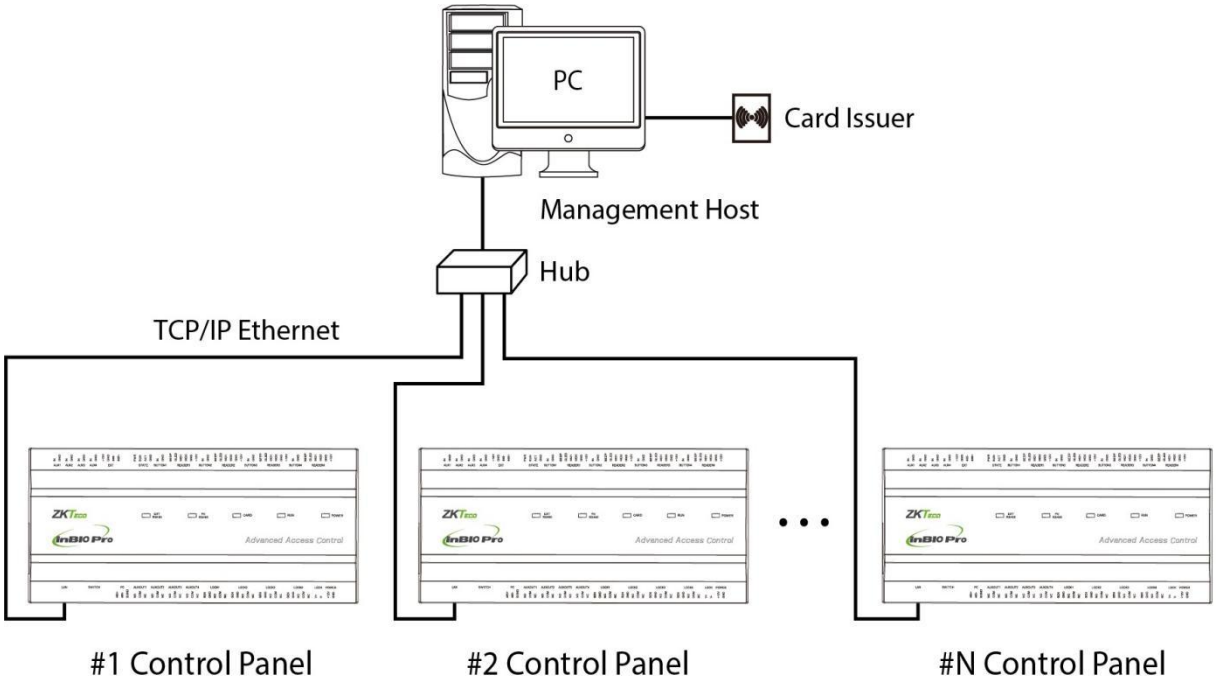


Figure 5-1 TCP/IP Communication System Networking

In Access software: Click **Device** > **Search Device** to search for access controllers in the network, and directly add from the search result.

5.3 DIP Switch Settings

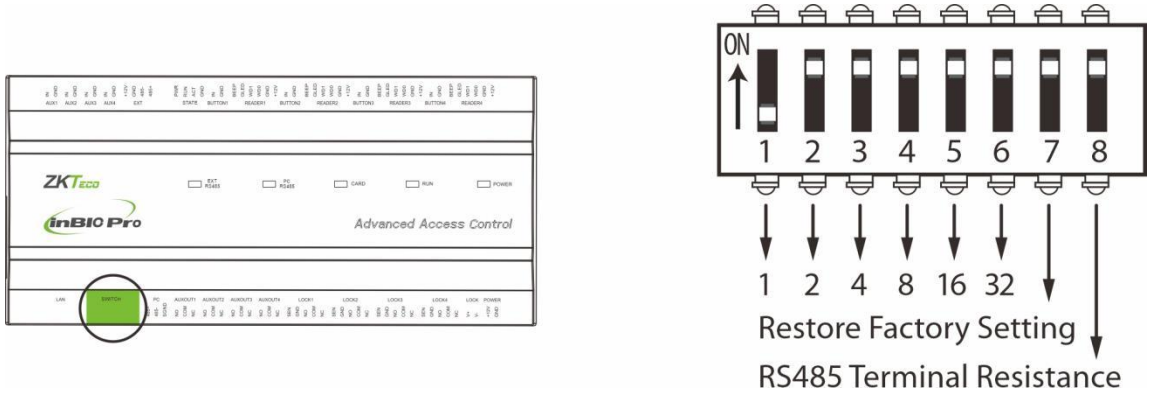


Figure 5-2 DIP switch diagram

- **485 address setting**

1. Number 1-6 are reserved to set the device number for RS485 communication. The code is binary, and the numbering starts from left to right. When the switch is set to ON position, it indicates 1 (on); when the switch is set downwards, it indicates 0 (OFF).
2. For example, to set a device number 39=1+2+4+32, which corresponds to the binary code 111001, put number 1, 2, 3, and 6 to ON position, as illustrated below.

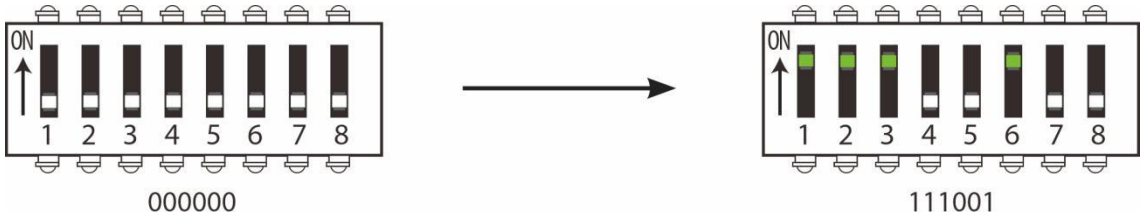


Figure 5-3 DIP switch setting diagram

Table 4-1 485 address setting table

Place Address	Switch Setting					
	1	2	3	4	5	6
Address No.	1	2	4	8	16	32
01	ON	OFF	OFF	OFF	OFF	OFF
02	OFF	ON	OFF	OFF	OFF	OFF
03	ON	ON	OFF	OFF	OFF	OFF
04	OFF	OFF	ON	OFF	OFF	OFF
05	ON	OFF	ON	OFF	OFF	OFF
06	OFF	ON	ON	OFF	OFF	OFF
07	ON	ON	ON	OFF	OFF	OFF
08	OFF	OFF	OFF	ON	OFF	OFF
09	ON	OFF	OFF	ON	OFF	OFF

10	OFF	ON	OFF	ON	OFF	OFF
11	ON	ON	OFF	ON	OFF	OFF
12	OFF	OFF	ON	ON	OFF	OFF
13	ON	OFF	ON	ON	OFF	OFF
14	OFF	ON	ON	ON	OFF	OFF
15	ON	ON	ON	ON	OFF	OFF
16	OFF	OFF	OFF	OFF	ON	OFF
17	ON	OFF	OFF	OFF	ON	OFF
18	OFF	ON	OFF	OFF	ON	OFF
19	ON	ON	OFF	OFF	ON	OFF
20	OFF	OFF	ON	OFF	ON	OFF
21	ON	OFF	ON	OFF	ON	OFF
22	OFF	ON	ON	OFF	ON	OFF
23	ON	ON	ON	OFF	ON	OFF
24	OFF	OFF	OFF	ON	ON	OFF
25	ON	OFF	OFF	ON	ON	OFF
26	OFF	ON	OFF	ON	ON	OFF
27	ON	ON	OFF	ON	ON	OFF
28	OFF	OFF	ON	ON	ON	OFF
29	ON	OFF	ON	ON	ON	OFF
30	OFF	ON	ON	ON	ON	OFF
31	ON	ON	ON	ON	ON	OFF
32	OFF	OFF	OFF	OFF	OFF	ON
33	ON	OFF	OFF	OFF	OFF	ON
34	OFF	ON	OFF	OFF	OFF	ON
35	ON	ON	OFF	OFF	OFF	ON
36	OFF	OFF	ON	OFF	OFF	ON
37	ON	OFF	ON	OFF	OFF	ON
38	OFF	ON	ON	OFF	OFF	ON
39	ON	ON	ON	OFF	OFF	ON
40	OFF	OFF	OFF	ON	OFF	ON
41	ON	OFF	OFF	ON	OFF	ON
42	OFF	ON	OFF	ON	OFF	ON
43	ON	ON	OFF	ON	OFF	ON
44	OFF	OFF	ON	ON	OFF	ON
45	ON	OFF	ON	ON	OFF	ON
46	OFF	ON	ON	ON	OFF	ON
47	ON	ON	ON	ON	OFF	ON
48	OFF	OFF	OFF	OFF	ON	ON
49	ON	OFF	OFF	OFF	ON	ON
50	OFF	ON	OFF	OFF	ON	ON
51	ON	ON	OFF	OFF	ON	ON
52	OFF	OFF	ON	OFF	ON	ON
53	ON	OFF	ON	OFF	ON	ON
54	OFF	ON	ON	OFF	ON	ON
55	ON	ON	ON	OFF	ON	ON
56	OFF	OFF	OFF	ON	ON	ON

57	**ON**	OFF	OFF	**ON**	**ON**	**ON**
58	OFF	**ON**	OFF	**ON**	**ON**	**ON**
59	**ON**	**ON**	OFF	**ON**	**ON**	**ON**
60	OFF	OFF	**ON**	**ON**	**ON**	**ON**
61	**ON**	OFF	**ON**	**ON**	**ON**	**ON**
62	OFF	**ON**	**ON**	**ON**	**ON**	**ON**
63	**ON**	**ON**	**ON**	**ON**	**ON**	**ON**

- ## Restoring factory setting

1. If you forget the IP address of the InBio Pro Plus series panel or the device does not work normally, you can use the number 7 DIP switch to restore it to factory default settings. The parameters which gets reset are device IP address, communication password, gateway, and subnet mask.

   Note: *Restoring the factory settings will empty the user data, please be careful.*

2. The switch is OFF by default. When it is moved up and down for three times within 10 seconds and f inally returned to OFF position, the factory settings will be restored after the access control panel is restarted.
3. The procedure is shown below.

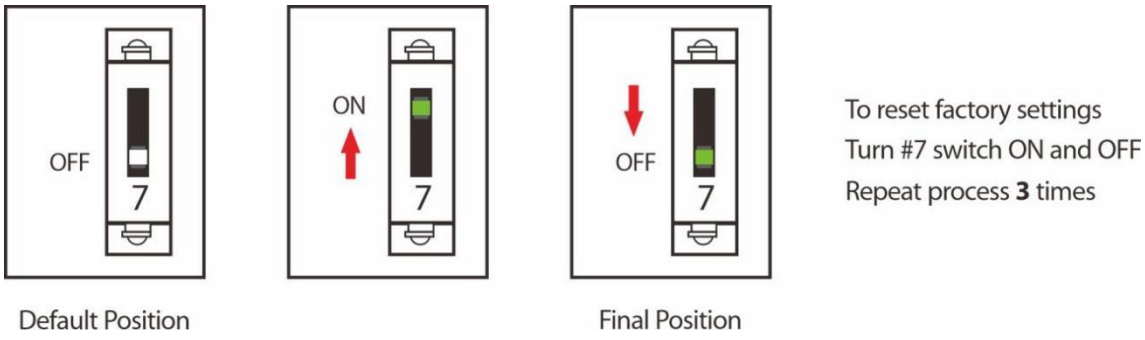


Figure 5-4 DIP switch setting diagram

- ## RS485 Terminal Resistance

To eliminate signal attenuation in communication cables and suppress interference, if the bus is longer than 200 meters, set the number 8 DIP switch to the ON position. The number 8 DIP switch is for setting the RS485 termination resistance. This is equivalent to a parallel connection of one 120ohm resistance between the 485+ and 485- lines.

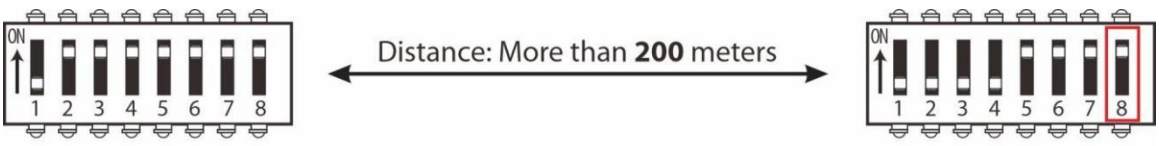


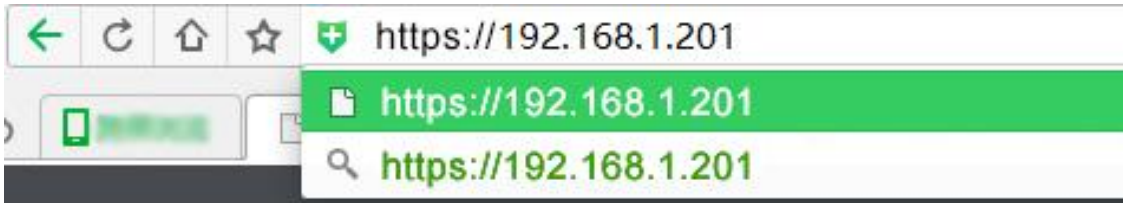
Figure 5-5 Restoring factory setting

6 Login to the Web Server

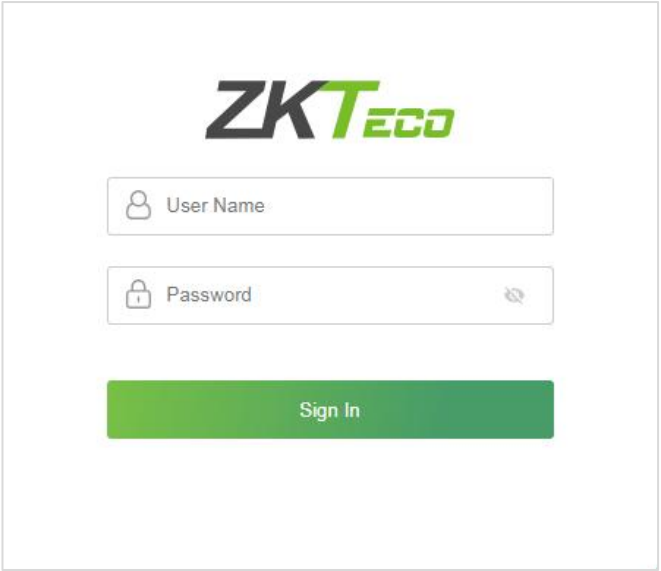
To help users conveniently manage controllers, the built-in Web Server function is added to some models. With this function, a user can connect to the controller through a PC, and enter the IP address of the controller to access the web. Users can also use the Web Server function to perform other operations, such as network configuration, Push communication configuration, time synchronization, and user account management.

6.1 Login Web Server

1. Connect the controller to the network or PC, start the browser, enter the IP address of the controller, which is **https://192.168.1.201** by default. Then you can visit the Web Server.



2. When Web Server is used, "User Name" and "Password" should be set firstly. The default "user name" is **admin** and the default "password" is **zkteco@12345**.

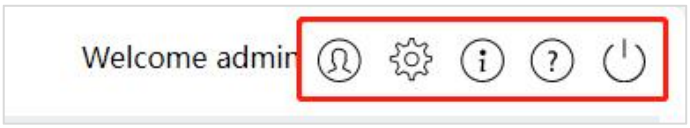


3. Click **Sign In** to access the Web Server.

Notes:

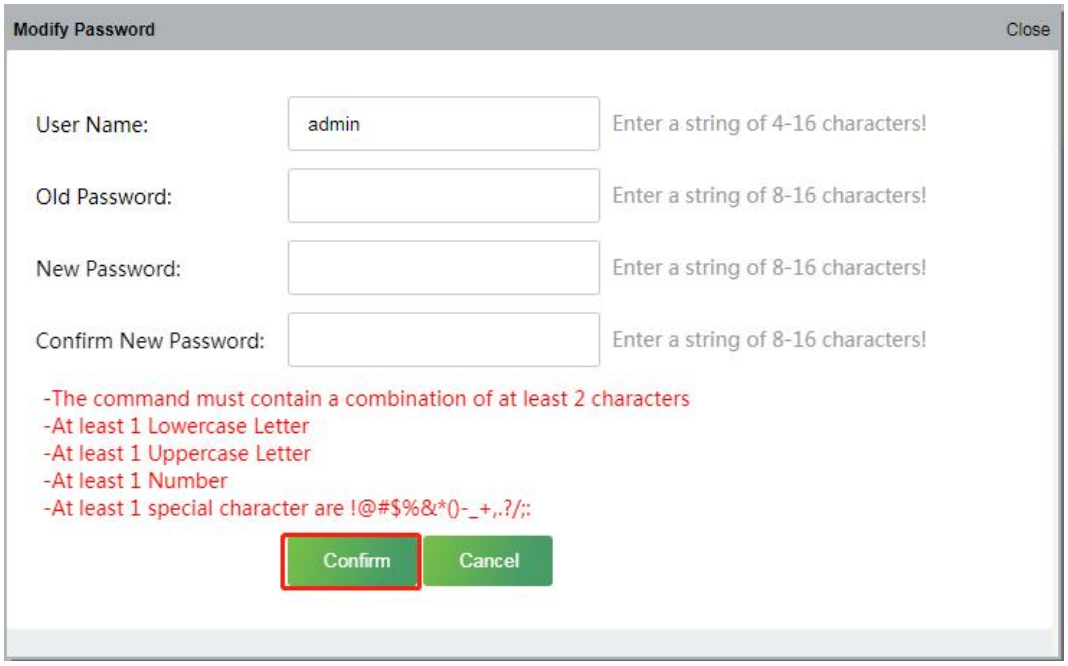
1. *IP addresses of both the server (PC) and the controller must be in the same network segment.*
2. *IP address of the controller could be found by searching devices with the BioSecurity software ([**Access - Access Device - Device - Search Device**]).*

6.2 Basic Operation Bar of the Web Server



- **Change of the Administrator's Password**

1. Click to modify the password.
2. Enter the old and new passwords in the pop-up window and click **Confirm** to change the administrator login password.



- **Language Settings**

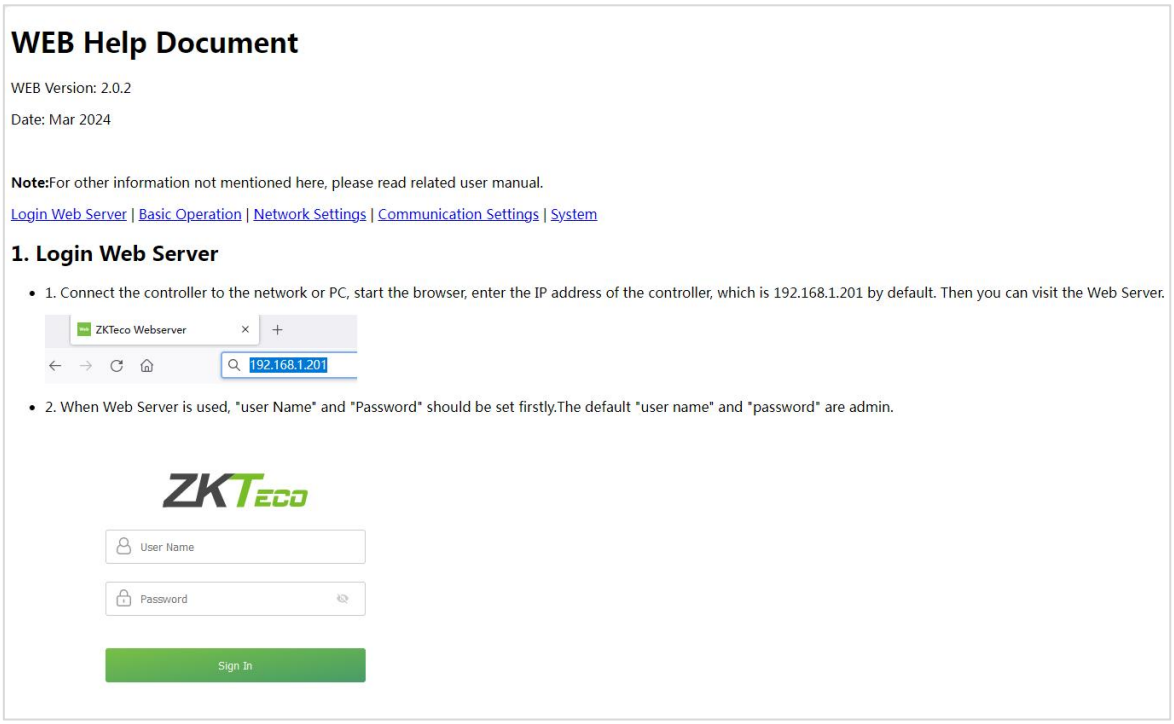
Click , change the language in which the server interface is displayed, and click **Confirm**.

- **Use Conditions of the Server**

Click ⓘ, and you can view the version of the current server, as well as thebrowser and resolution recommended for the server.

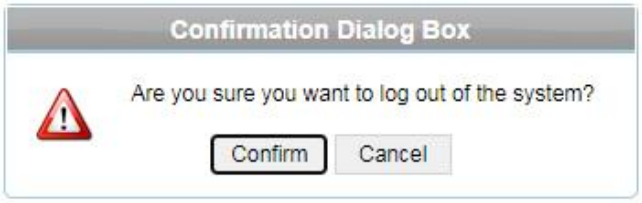
- **Online Help of the Server**

If you met some problems when using the server, click ? to view or download the user help document.



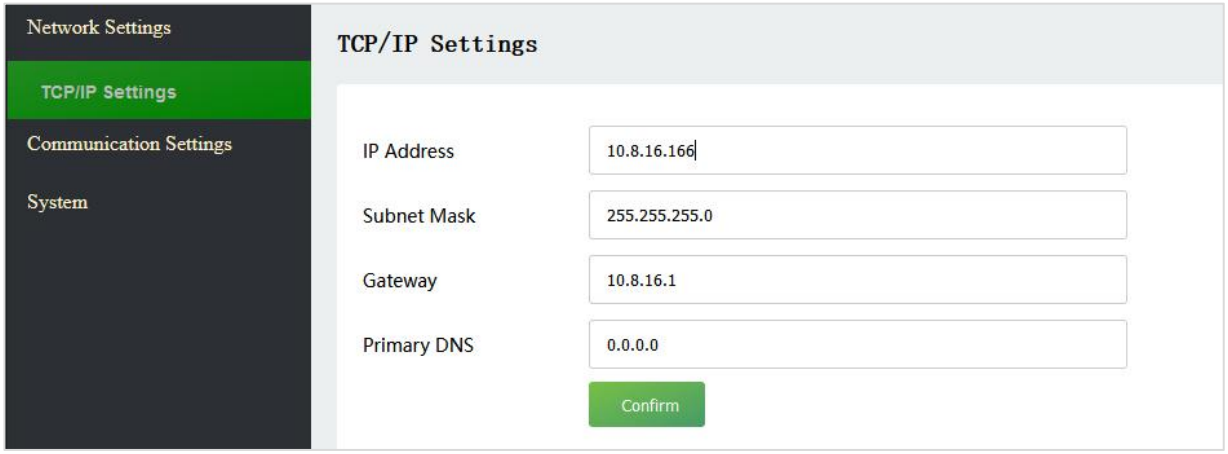
- **Exit**

Click , and then click Confirm to return to the server login page.



6.3 Network Settings

- **TCP/IP Settings**



Function introduction:

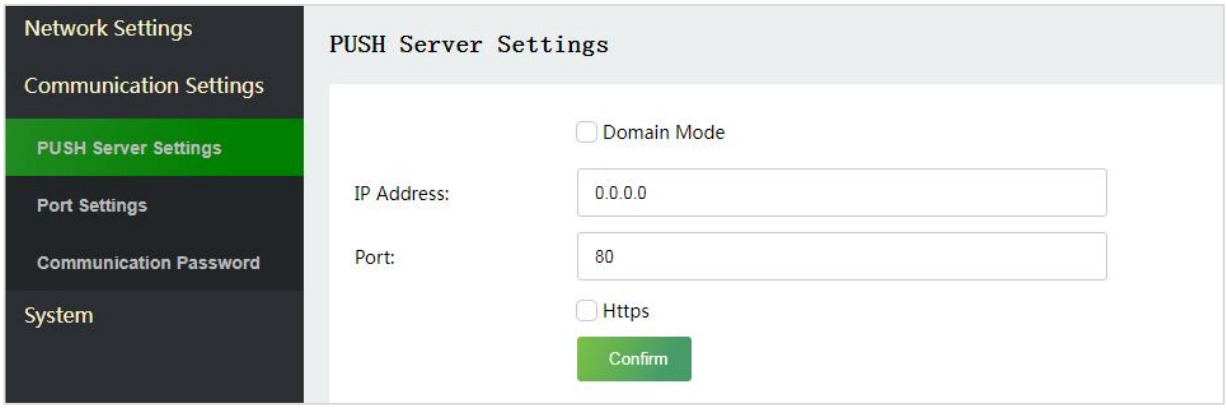
Set the TCP/IP communication parameters, which are used in the communications between device and PC.

➢ **Operating steps:**

1. Click **Network Setting** > **TCP/IP Settings**.
2. Input the device's IP address, Subnet Mask, Default Gateway.
   - **IP address:** the default IP is 192.168.1.201, and you can modify according to the actual.
   - **Subnet Mask:** the default subnet mask is 255.255.255.0, and you can modify according to the actual.
   - **Default Gateway:** the default gateway is 0.0.0.0, and you can modify it according to the actual.
   - **Primary DNS:** the default value is null, and you can set its value.
3. Click **Confirm** to write parameters into the device. please restart the device by manual.

- **Communication Settings**

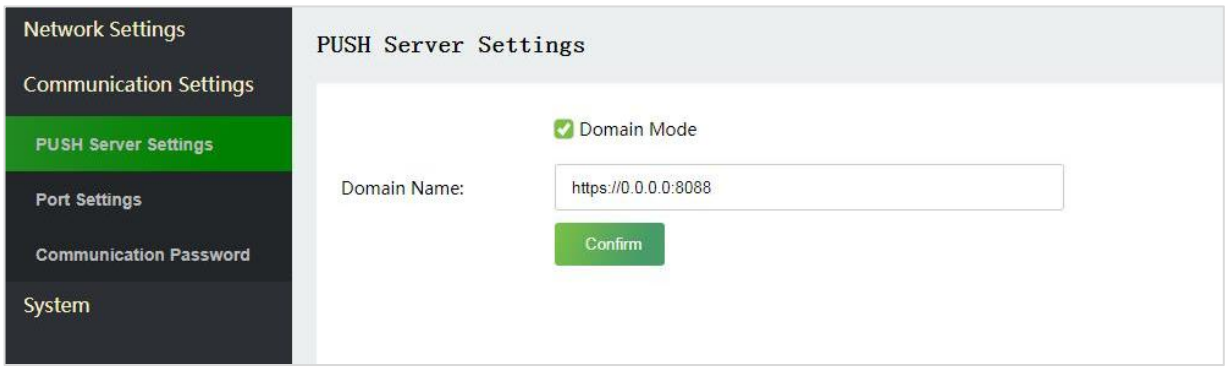
PUSH Server Settings



PUSH Server: Indicates that the controller proactively pushes information to the server.

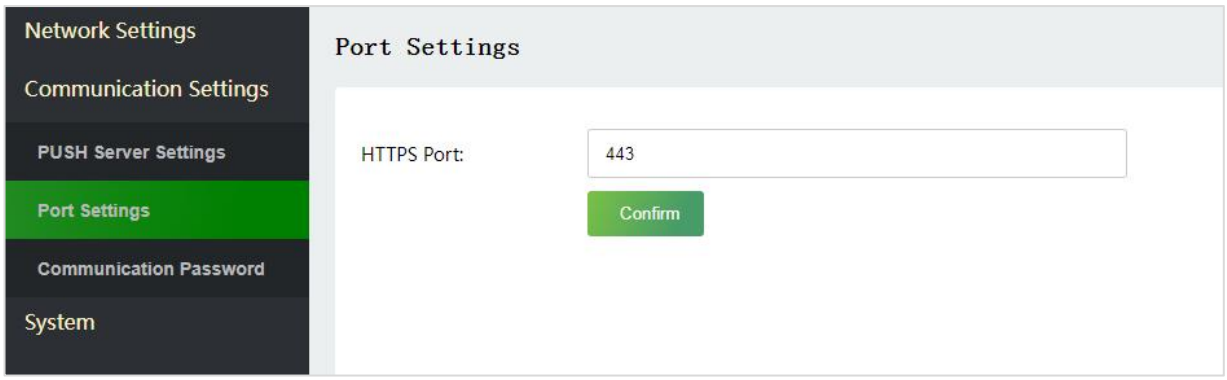
IP Mode:

- **IP Address:** the default server IP is 0.0.0.0, and you can modify it according to the actual.
- **Port:** The default Port is 80, and you can modify it according to the actual.



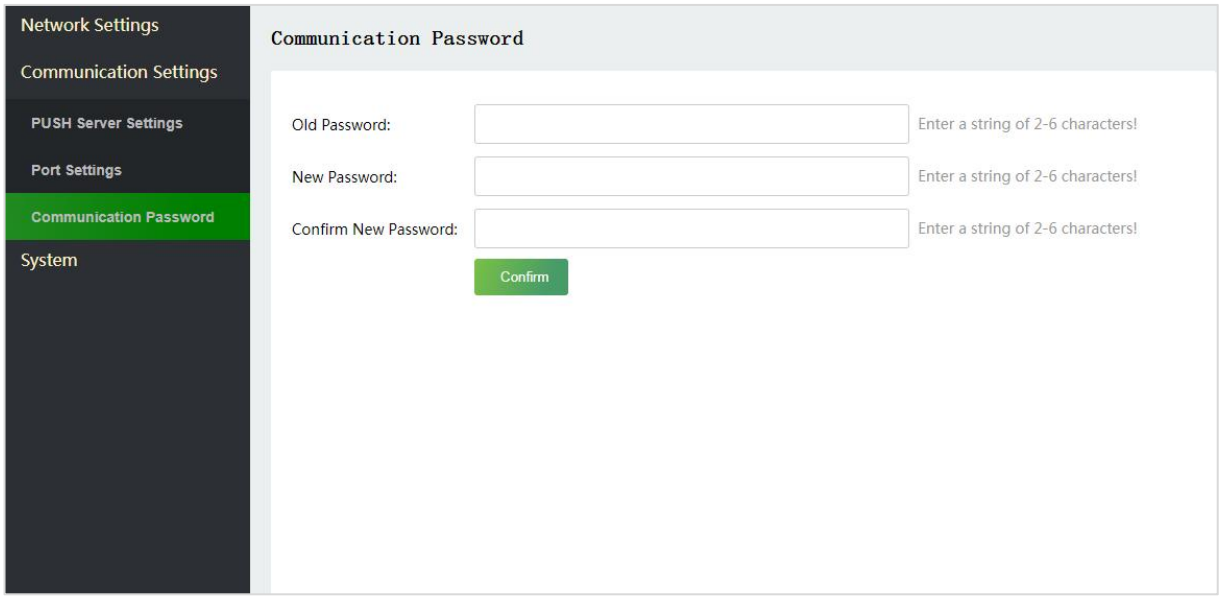
Domain Mode: The default value is null, and you can set its value.

- **Port Settings**



Http Port: Indicates that the client initiates an HTTP request to a specified port on the server. the default HTTP Port is 80, and you can modify it according to the actual.

- **Communication Password**

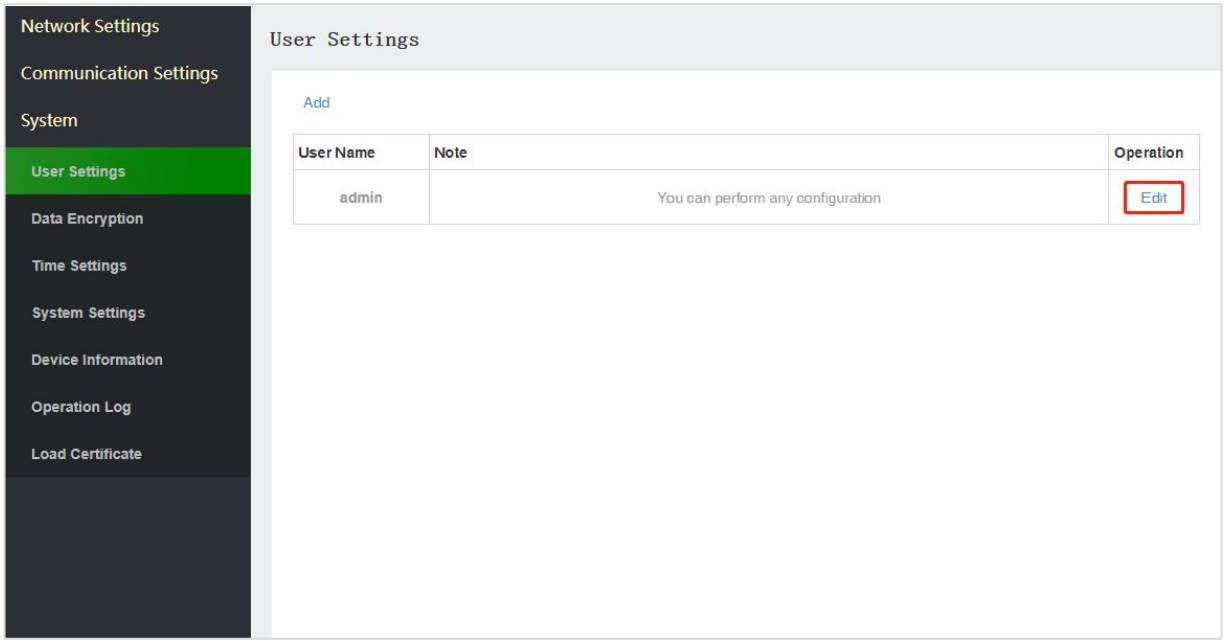


Communication Password: Indicates that network communication is encrypted. The default value is null, and you can set its value.

If you configure the communication password here, the same communication password must be configured on the server before the connection can be set up.

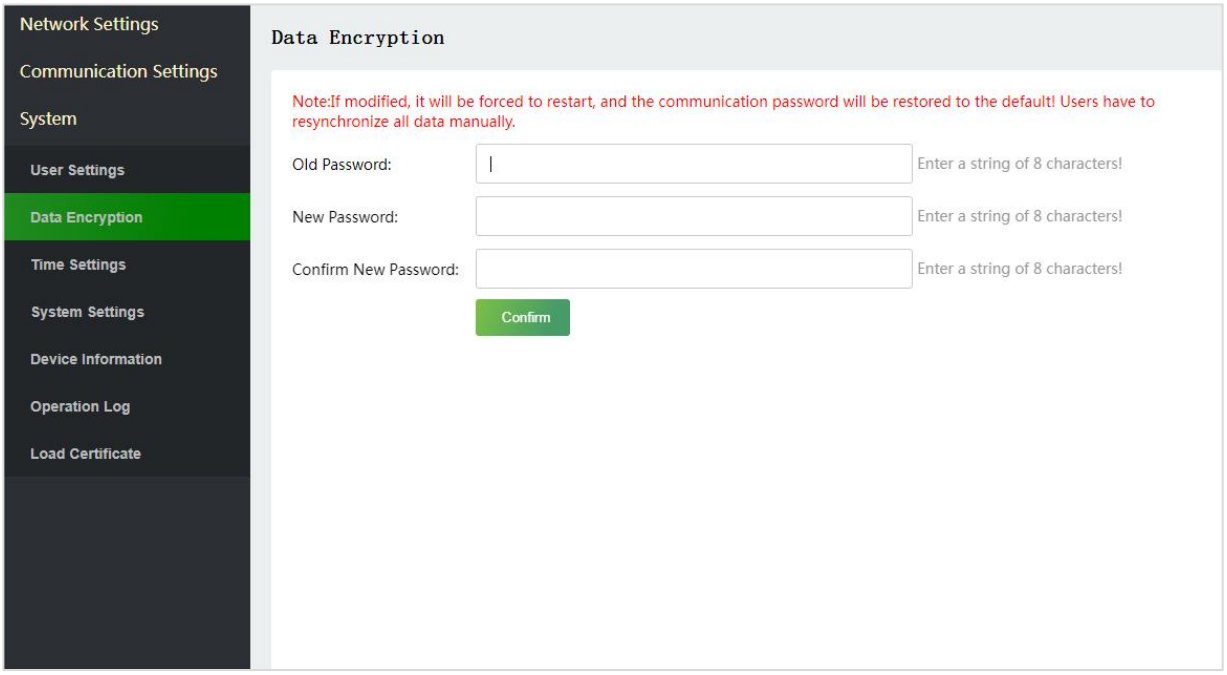
- **System**

User Settings



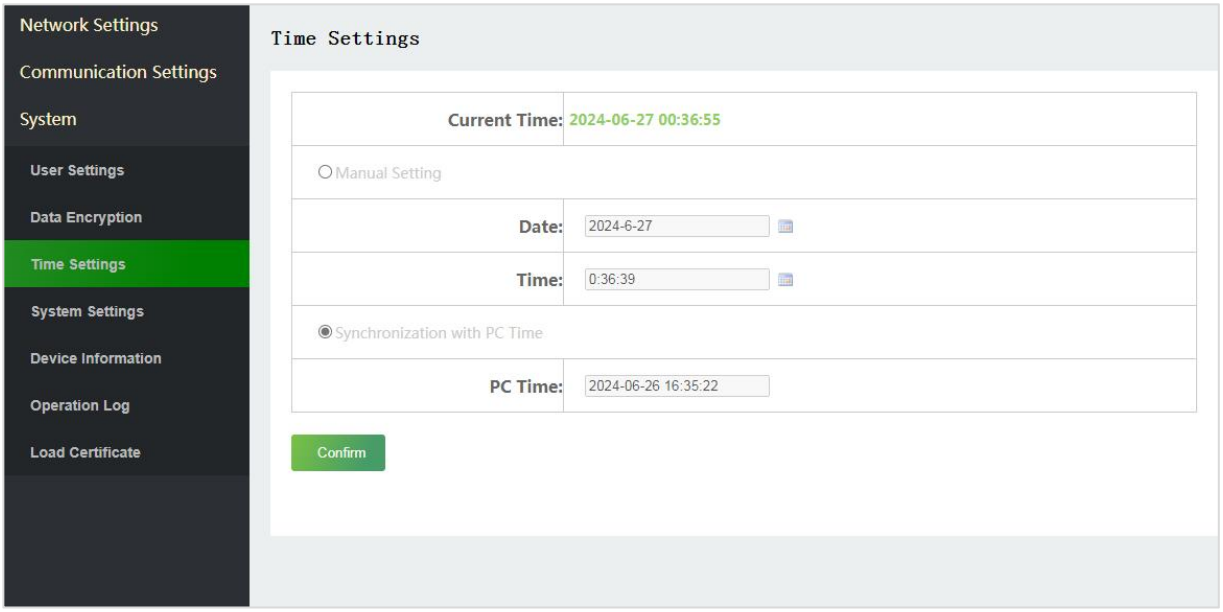
Click **Edit** to change the login password of an administrator or a user.

Data Encryption



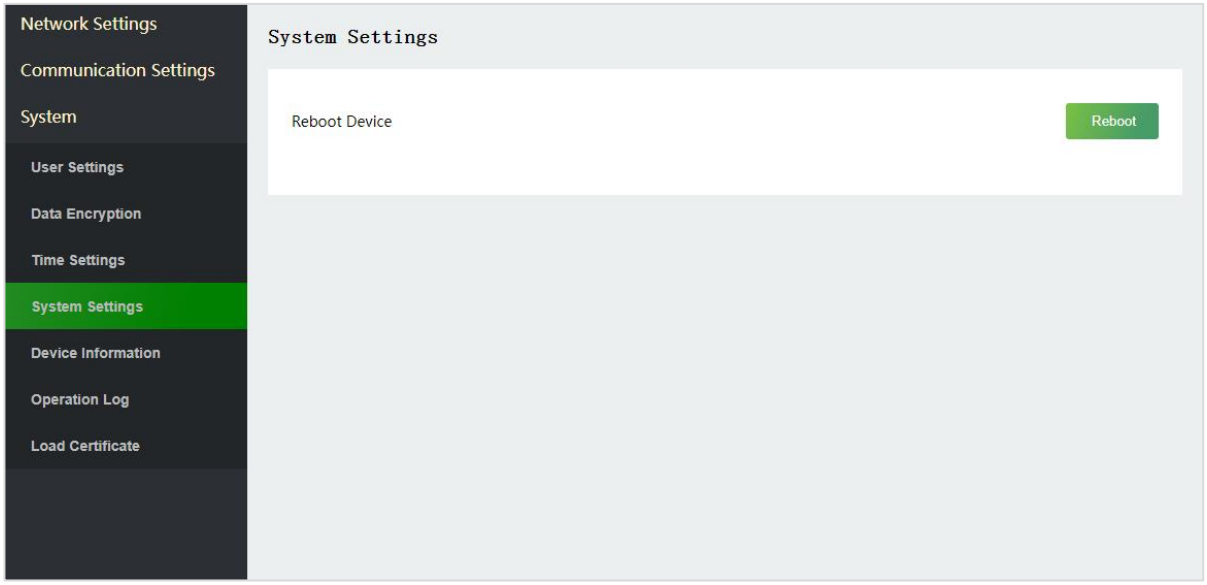
Data Encryption: This feature ensures user data is encrypted and stored securely in the device firmware, preventing unauthorized access. By default, data is encrypted, and users can customize the encryption password (after modification, the communication password will be restored to the default password for data re-synchronization).

Time Settings



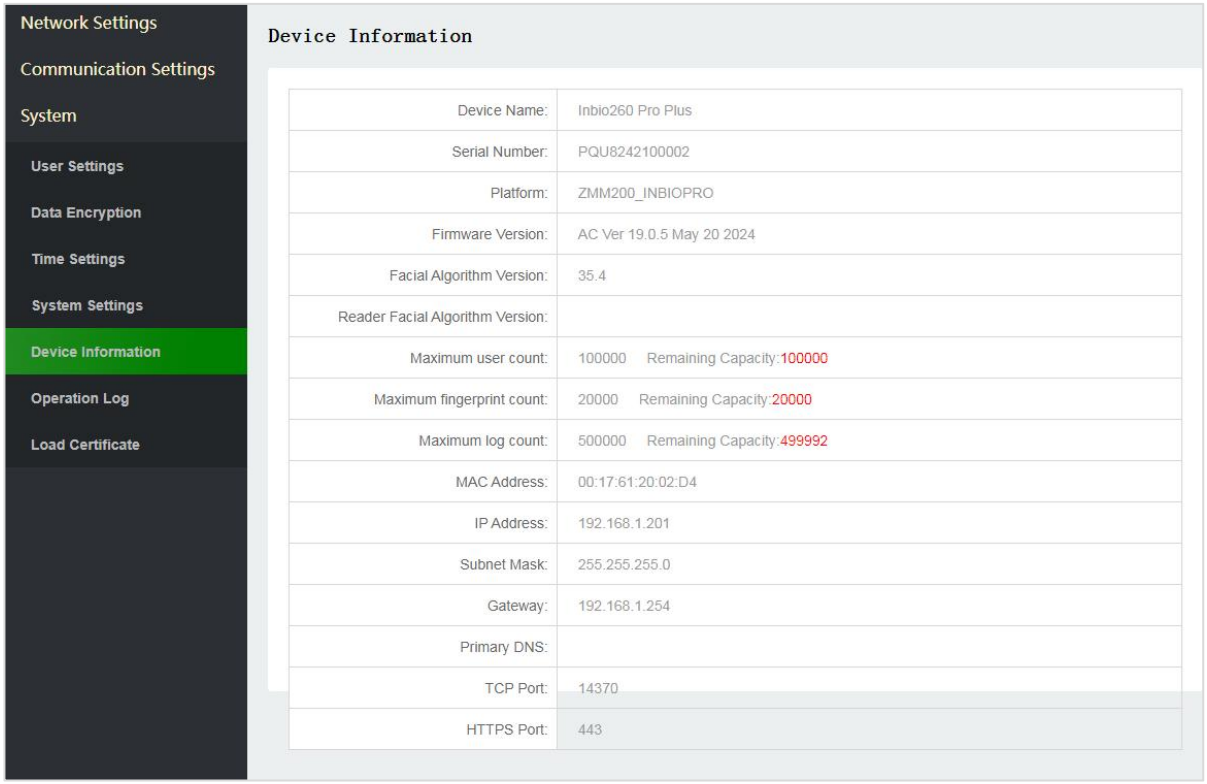
You can manually configure the controller time or synchronize the controller time with the PC time, and click Confirm to complete the setting.

System Settings



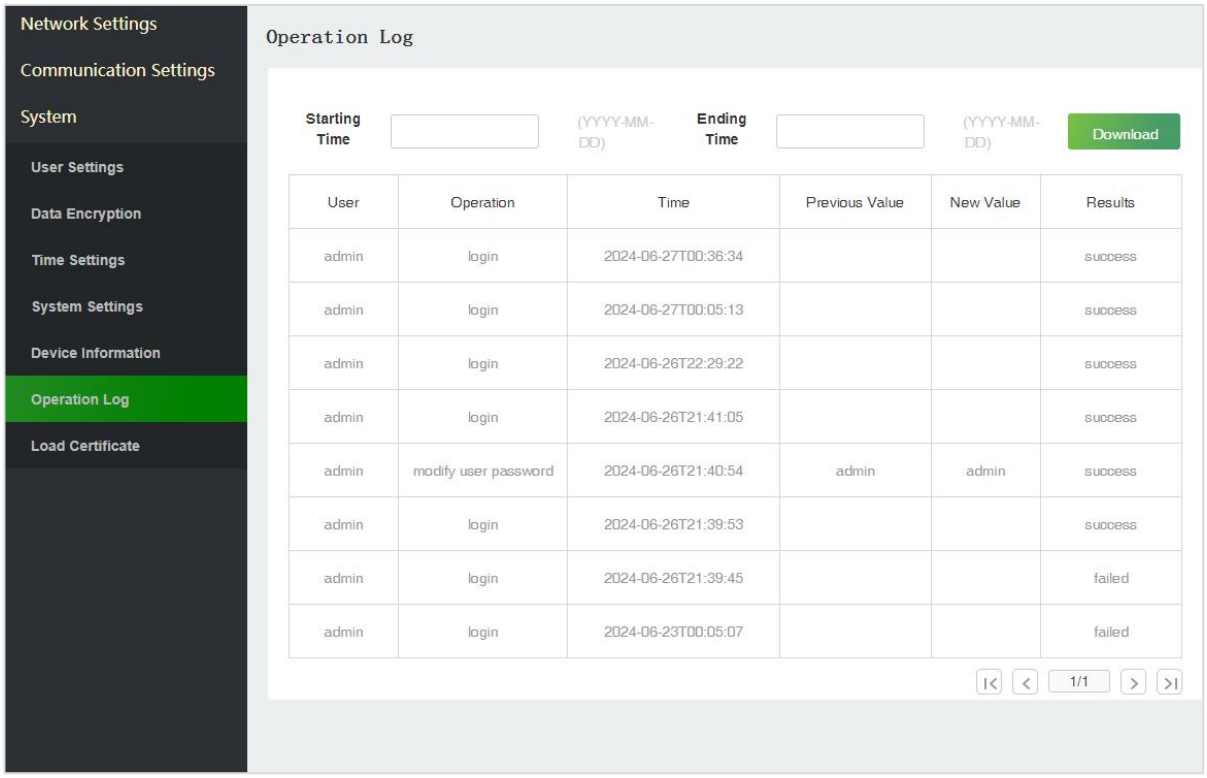
Click **Reboot**. The device will be restarted.

Device Information



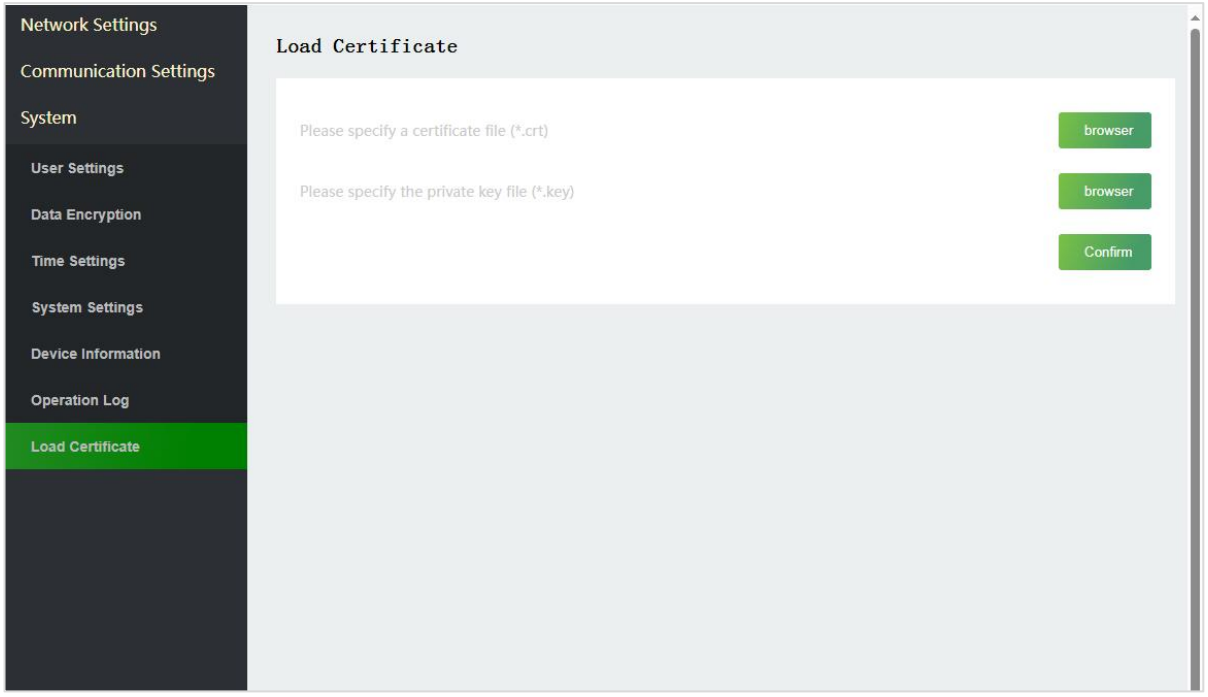
You can view the basic information, remaining capacity, and network information of the current device.

Operation Log



Users can view and download webserver operation logs here.

Load Certificate

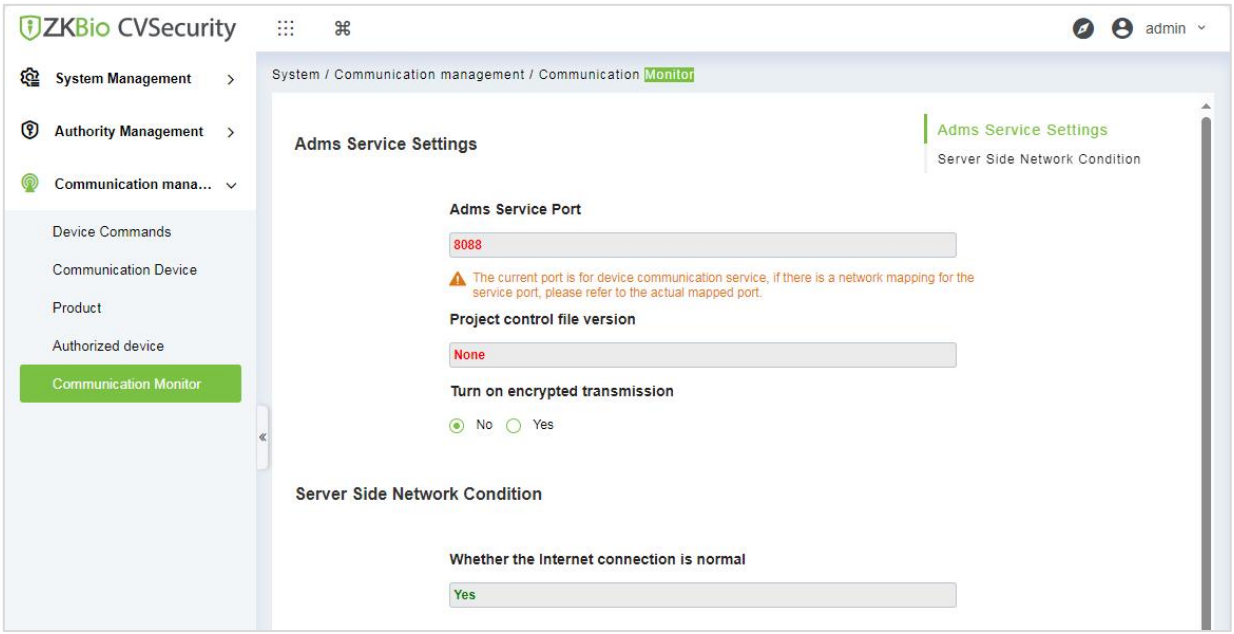


This feature enables users to upload their authenticated browser certificate for accessing the InBio Pro Plus series's webserver.

7 Connect to ZKBioCVSecurity Software

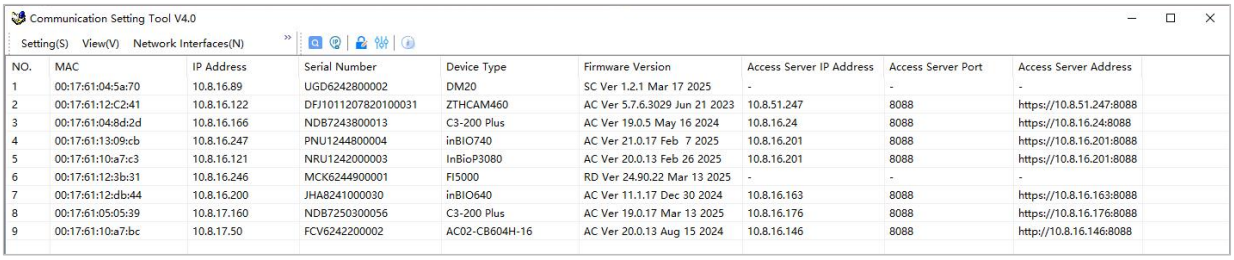
7.1 Set the Communication Address

Login to ZKBioCVSecurity software, click **System** > **Communication management**> **Communication Monitor** to set the ADMS Service Port, as shown in the figure below:



7.2 Change Communication Password

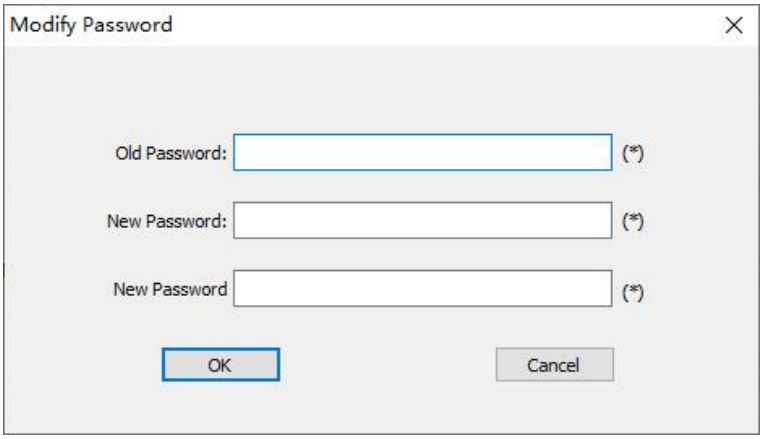
1. Search for devices using the **DeviceSettingTool_V4.0** search tool. Click the icon to search for devices.



NO.	MAC	IP Address	Serial Number	Device Type	Firmware Version	Access Server IP Address	Access Server Port	Access Server Address
1	00:17:61:04:5a:70	10.8.16.89	UGD6242800002	DM20	SC Ver 1.2.1 Mar 17 2025	-	-	-
2	00:17:61:12:C2:41	10.8.16.122	DFJ101120782010003 1	ZTHCAM460	AC Ver 5.7.6.3029 Jun 21 2023	10.8.51.247	8088	https://10.8.51.247:8088
3	00:17:61:04:8d:2d	10.8.16.166	NDB7243800013	C3-200 Plus	AC Ver 19.0.5 May 16 2024	10.8.16.24	8088	https://10.8.16.24:8088
4	00:17:61:13:09:cb	10.8.16.247	PNU1244800004	inBIO740	AC Ver 21.0.17 Feb 7 2025	10.8.16.201	8088	https://10.8.16.201:8088
5	00:17:61:10:a7:c3	10.8.16.121	NRU1242000003	InBioP3080	AC Ver 20.0.13 Feb 26 2025	10.8.16.201	8088	https://10.8.16.201:8088
6	00:17:61:12:3b:31	10.8.16.246	MCK6244900001	FI5000	RD Ver 24.90.22 Mar 13 2025	-	-	-
7	00:17:61:12:db:44	10.8.16.200	JHA8241000030	inBIO640	AC Ver 11.1.17 Dec 30 2024	10.8.16.163	8088	https://10.8.16.163:8088
8	00:17:61:05:05:39	10.8.17.160	NDB7250300056	C3-200 Plus	AC Ver 19.0.17 Mar 13 2025	10.8.16.176	8088	https://10.8.16.176:8088
9	00:17:61:10:a7:bc	10.8.17.50	FCV6242200002	AC02-CB604H-16	AC Ver 20.0.13 Aug 15 2024	10.8.16.146	8088	http://10.8.16.146:8088

2. Select the searched device and click the icon to change the communication password. For the first time to change the password, the default communication password is **Zk@123**, and the new password is a combination of **2~6** digit alphabetic characters.

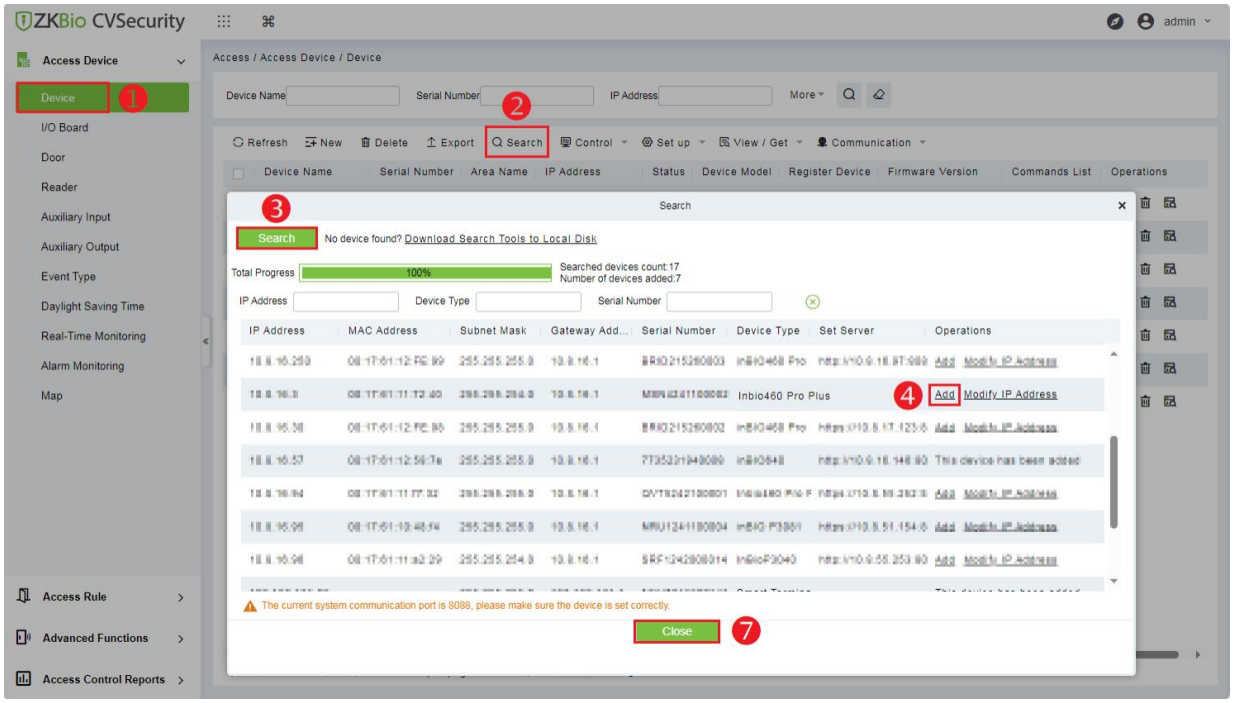
Note: If the communication password is forgotten, the device can be reset to its factory settings, and the password will automatically revert to the default value.

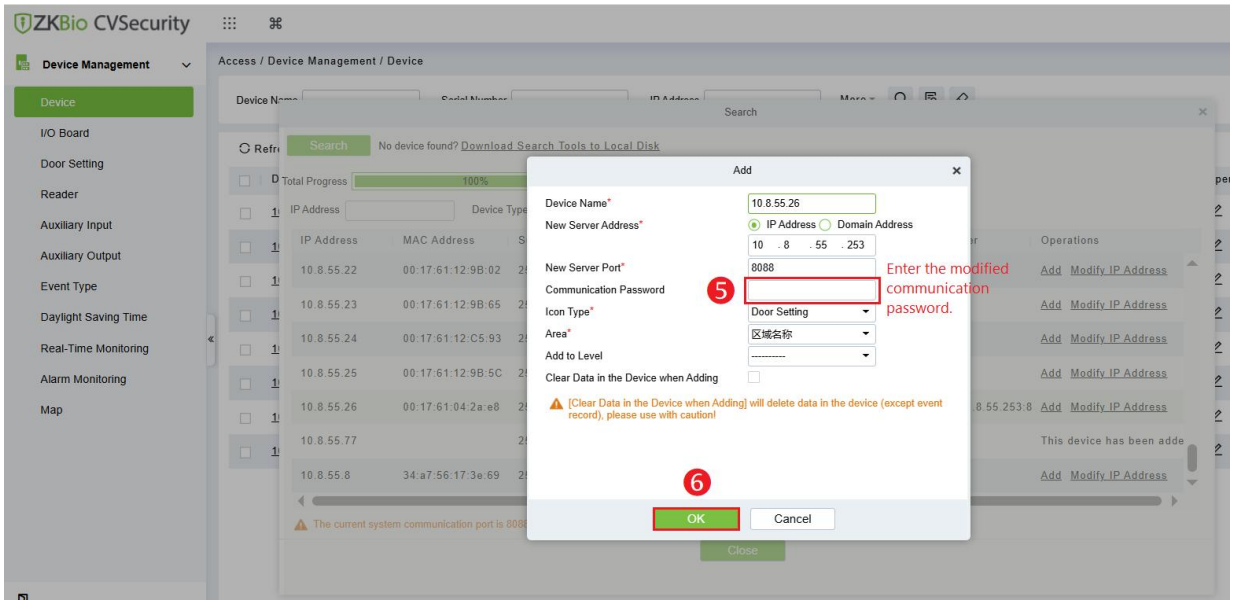


7.3 Add Device on the Software

Add the device by searching. The process is as follows:

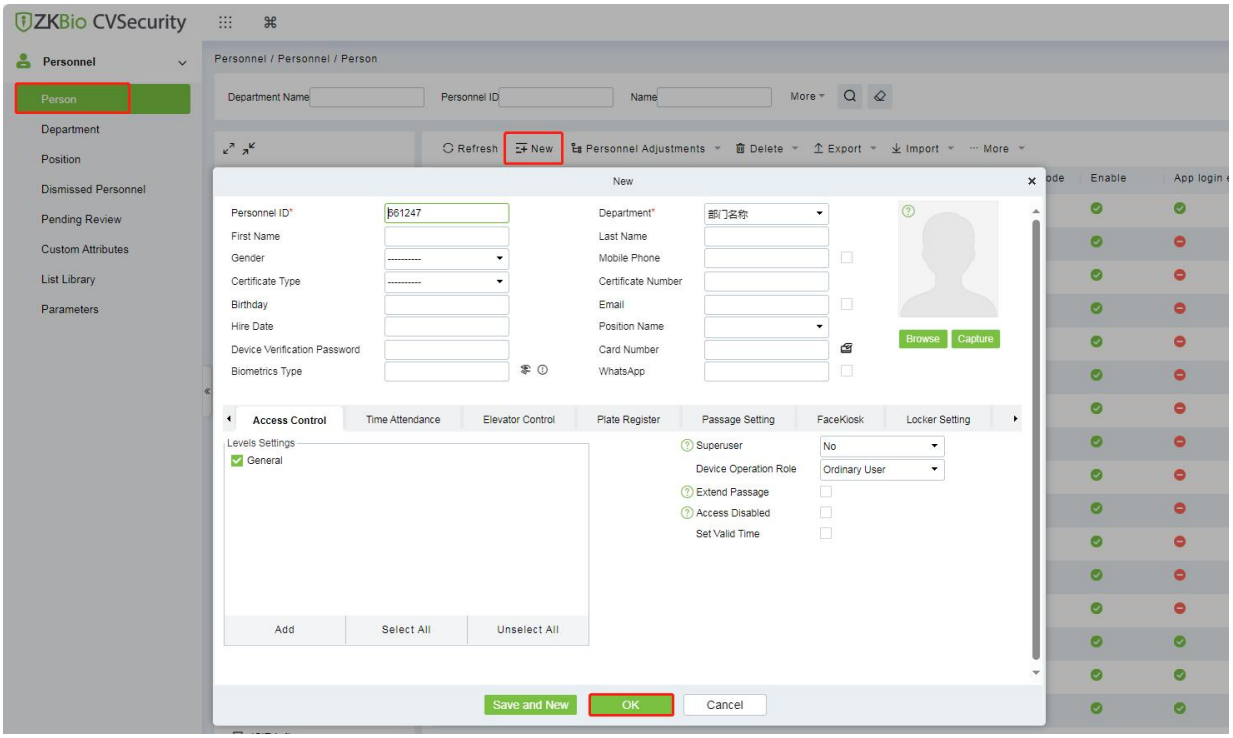
1. Click **Access > Device Management > Device > Search**, to open the Search interface in the software.
2. Click **Search**, and it will prompt Searching…….
3. After searching, the list and total number of access controllers will be displayed.
4. Click **Add** in operation column, a new window will pop-up. Enter the communication password, select Icon type, Area, and Add to Level from each dropdown and click **OK** to add the device.



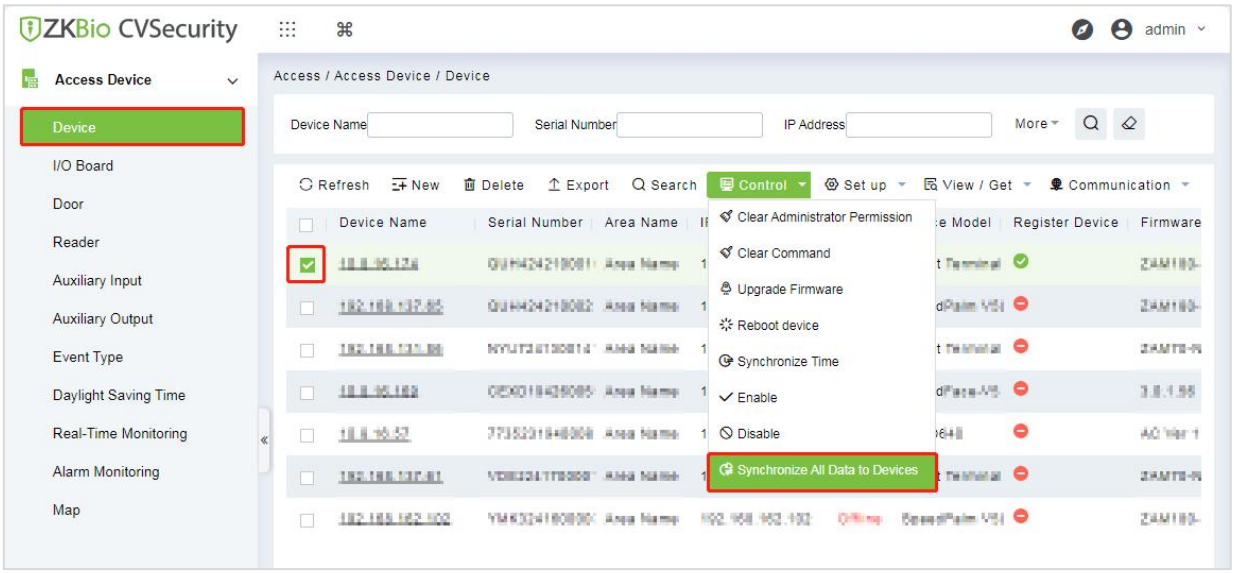


7.4 Add Personnel on the Software

1. Click **Personnel** > **Person** > **New** to register a new user.



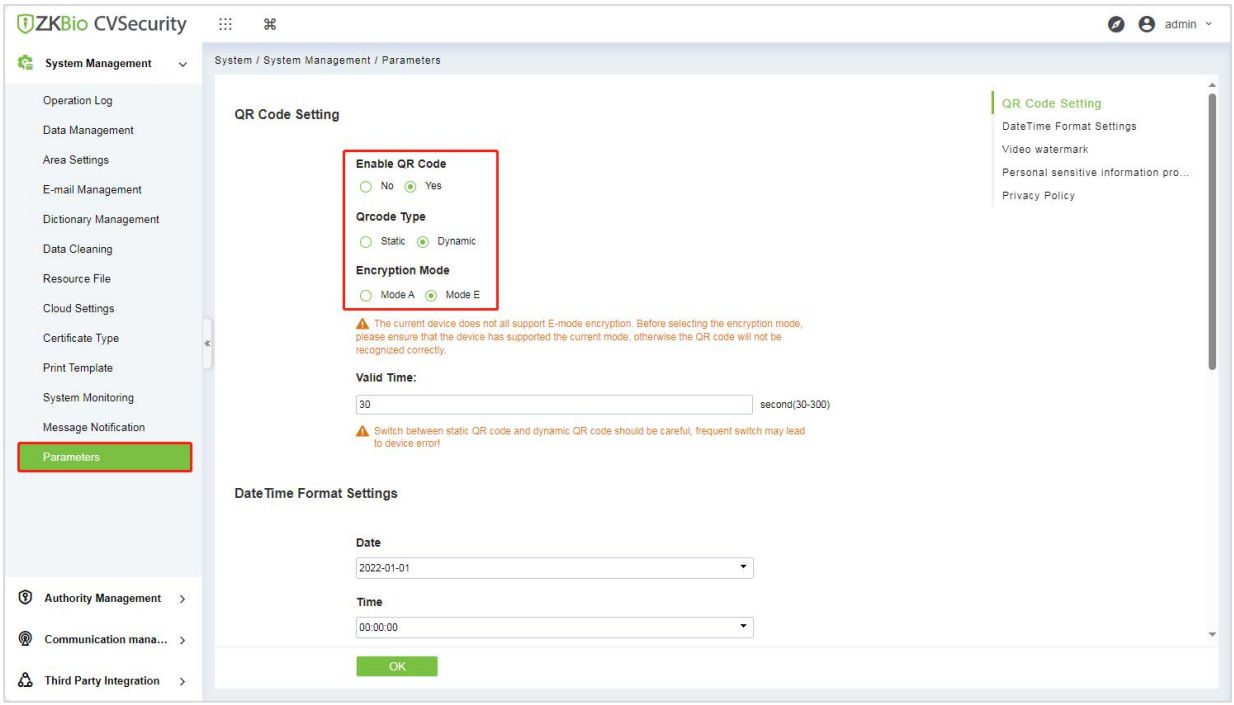
2. Fill in all the required fields and click **OK**.
3. Click **Access Device** > **Device** > **Control** > **Synchronize All Data to Devices** to synchronize all the data to the device including the new users.



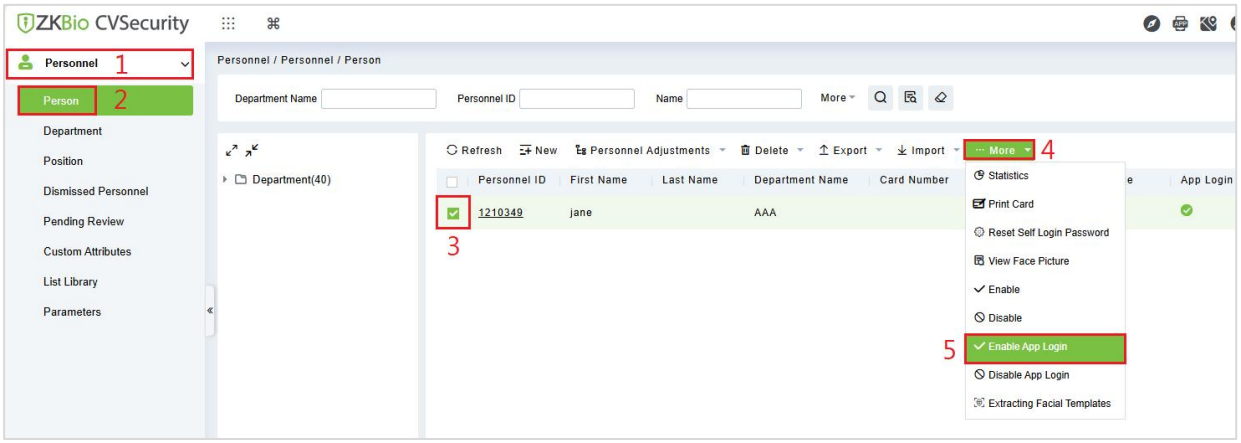
7.5 Mobile Credential★

After downloading and installing the ZKBio Zexus Mobile App, the user needs to set the Server before login. The steps are given below:

1. In ZKBioCVSecurity, click **System** > **System Management** > **Parameters**, set **Enable QR Code** to "Yes", and select the Qrcode Type as **Dynamic**, the valid time of the QR code can be set.



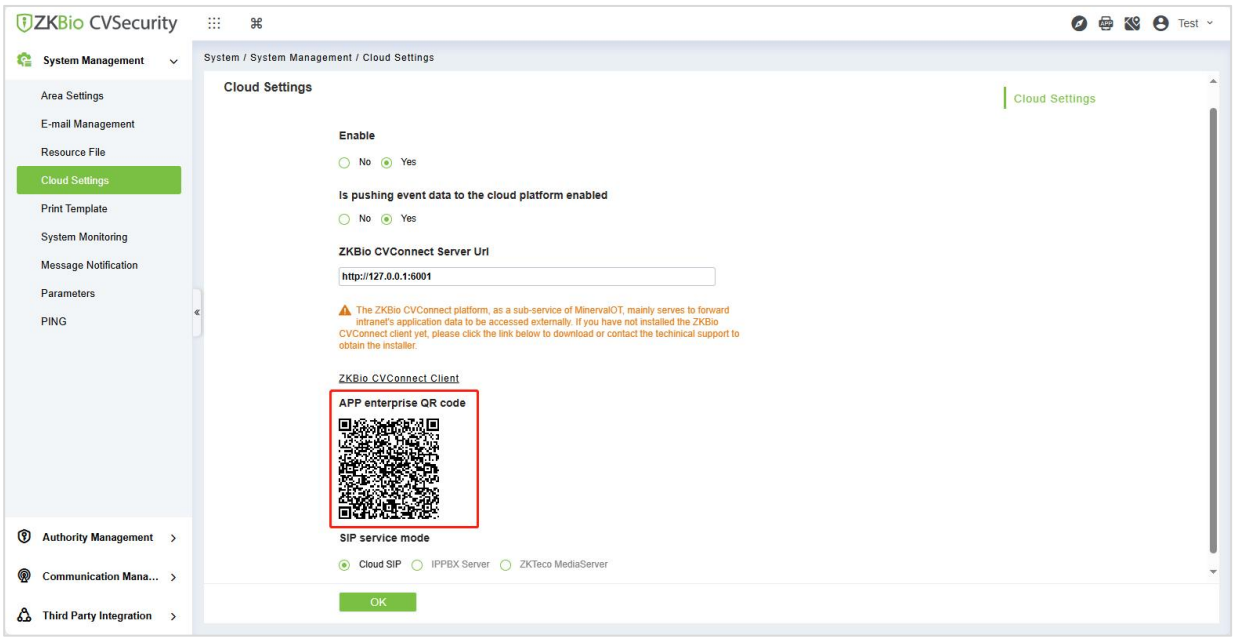
2. Click **Personnel** > **Personnel** > **Person**, select the personnel and click **More** > **Enable APP Login**.



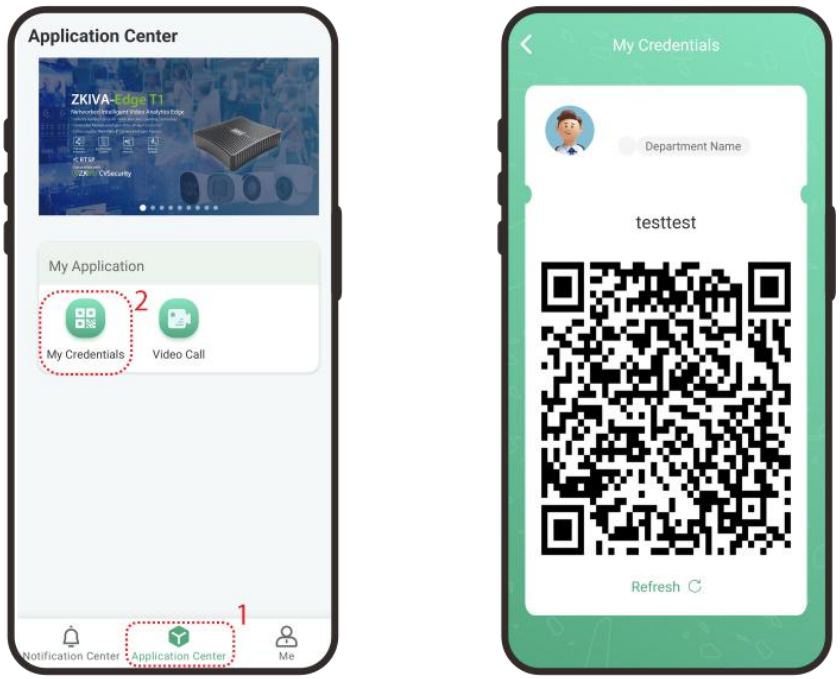
3. Open the App on the Smartphone. On the login screen, select the role-**Personnel**, enter the account information, and click **Login**.

   Organization Name: Scan the organization code you get before. (Enter **System > System Management >Cloud Setting >APP enterprise QR Code**)

   Account & Password: The personnel ID & password (default: 123456).



4. Click **Application Center** > **Mobile Credential** on the App, and a QR code will appear, which includes employee ID and card number information.

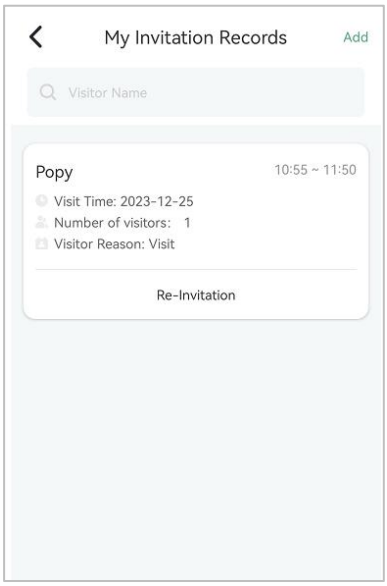


5. The QR code can replace a physical card on a specific device to achieve contactless authentication to open the door.
6. The QR code refreshes automatically for every 30s and supports manual refresh.

- **Visitor Invitation**

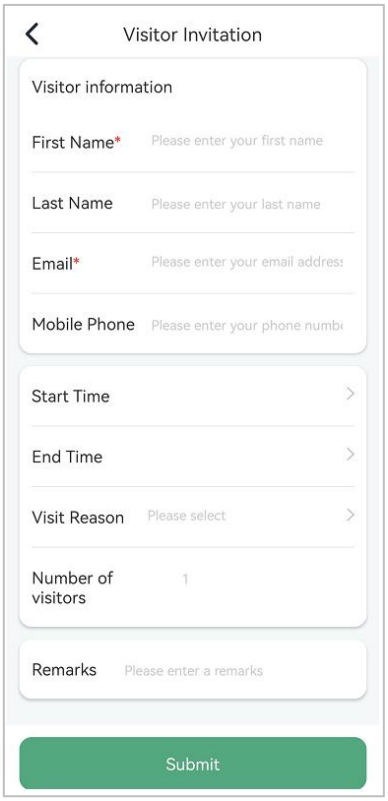
My Invitation Records

Show your invitation history, click the **Re-Invitation** button to quickly invite the visitor.



Invite Visitor

Click the **Add** button to fill in visitor information.



After clicking the **Submit** button, the page jumps to the visitor invitation success screen.

You can take a screenshot of this page and send it to your visitor, or the system will automatically send an email to the visitor.

Note: *For other specific operations, please refer to* ***ZKBio Zexus Mobile App User Manual****.*

8 Privacy Policy

Notice:

To help you better use the products and services of ZKTeco and its affiliates, hereinafter referred as "we", "our", or "us", the smart service provider, we consistently collect your personal information. Since we understand the importance of your personal information, we took your privacy sincerely and we have formulated this privacy policy to protect your personal information. We have listed the privacy policies below to precisely understand the data and privacy protection measures related to our smart products and services.

Before using our products and services, please read carefully and understand all the rules and provisions of this Privacy Policy. If you do not agree to the relevant agreement or any of its terms, you must stop using our products and services.

I. Collected Information

To ensure the normal product operation and help the service improvement, we will collect the information voluntarily provided by you or provided as authorized by you during registration and use or generated as a result of your use of services.

1. **User Registration Information:** At your first registration, the feature template (**Fingerprint template/Face template/Palm template**) will be saved on the device according to the device type you have selected to verify the unique similarity between you and the User ID you have registered. You can optionally enter your Name and Code. The above information is necessary for you to use our products. If you do not provide such information, you cannot use some features of the product regularly.

2. **Product information:** According to the product model and your granted permission when you install and use our services, the related information of the product on which our services are used will be collected when the product is connected to the software, including the Product Model, Firmware Version Number, Product Serial Number, and Product Capacity Information. **When you connect your product to the software, please carefully read the privacy policy for the specific software.**

II. Product Security and Management

1. When you use our products for the first time, you shall set the Administrator privilege before performing specific operations. Otherwise, you will be frequently reminded to set the Administrator privilege when you enter the main menu interface. **If you still do not set the Administrator privilege after receiving the system prompt, you should be aware of the possible security risk (for example, the data may be manually modified).**

2. All the functions of displaying the biometric information are disabled in our products by default.

You can choose Menu > System Settings to set whether to display the biometric information. If you enable these functions, we assume that you are aware of the personal privacy security risks specified in the privacy policy.

3. Only your user ID is displayed by default. You can set whether to display other user verification information (such as Name, Department, Photo, etc.) under the Administrator privilege. **If you choose to display such information, we assume that you are aware of the potential security risks (for example, your photo will be displayed on the device interface).**

4. The camera function is disabled in our products by default. If you want to enable this function to take pictures of yourself for attendance recording or take pictures of strangers for access control, the product will enable the prompt tone of the camera. **Once you enable this function, we assume that you are aware of the potential security risks.**

5. All the data collected by our products is encrypted using the AES 256 algorithm. All the data uploaded by the Administrator to our products are automatically encrypted using the AES 256 algorithm and stored securely. If the Administrator downloads data from our products, we assume that you need to process the data and you have known the potential security risk. In such a case, you shall take the responsibility for storing the data. You shall know that some data cannot be downloaded for sake of data security.

6. All the personal information in our products can be queried, modified, or deleted. If you no longer use our products, please clear your personal data.

III. How we handle personal information of minors

Our products, website and services are mainly designed for adults. Without consent of parents or guardians, minors shall not create their own account. If you are a minor, it is recommended that you ask your parents or guardian to read this Policy carefully, and only use our services or information provided by us with consent of your parents or guardian.
We will only use or disclose personal information of minors collected with their parents' or guardians' consent if and to the extent that such use or disclosure is permitted by law or we have obtained their parents' or guardians' explicit consent, and such use or disclosure is for the purpose of protecting minors.
Upon noticing that we have collected personal information of minors without the prior consent from verifiable parents, we will delete such information as soon as possible.

IV. Others

You can visit https://www.zkteco.com/cn/index/Index/privacy protection.html to learn more about how we collect, use, and securely store your personal information. To keep pace with the rapid development of technology, adjustment of business operations, and to cope with customer needs, we will constantly deliberate and optimize our privacy protection measures and policies. Welcome to visit our official website at any time to learn our latest privacy policy.

9 Eco-friendly Operation

The product's "eco-friendly operational period" refers to the time period during which this product will not discharge any toxic or hazardous substances when used in accordance with the prerequisites in this manual.

The eco-friendly operational period specified for this product does not include batteries or other components that are easily worn down, and must be periodically replaced. The battery's eco-friendly operational period is 5 years.

Hazardous or Toxic substances and their quantities

Component Name	Hazardous/Toxic Substance/Element					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent chromium (Cr6+)	Polybrominated Biphenyls (PBB)	Polybrominated Diphenyl Ethers (PBDE)
Chip Resistor	×	○	○	○	○	○
Chip Capacitor	×	○	○	○	○	○
Chip Inductor	×	○	○	○	○	○
Diode	×	○	○	○	○	○
ESD component	×	○	○	○	○	○
Buzzer	×	○	○	○	○	○
Adapter	×	○	○	○	○	○
Screws	○	○	○	×	○	○

○ indicates that the total amount of toxic content in all the homogeneous materials is below the limit as specified in SJ/T 11363—2006.

× indicates that the total amount of toxic content in all the homogeneous materials exceeds the limit as specified in SJ/T 11363—2006.

Note: 80% of this product's components are manufactured using non-toxic and eco-friendly materials. The components which contain toxins or harmful elements are included due to the current economic or technical limitations which prevent their replacement with non-toxic materials or elements.

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