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Access Control System Installation Guide

Cables and Wiring

● The line pipe (trunk channel) has open lines and buried lines. The open line requires horizontal and vertical, neat and beautiful, and the buried lines require short, smooth and less elbows;

● Follow the shortest route, do not destroy the original strong electricity, do not damage the waterproof principle, all the lines must be laid in a straight line

● All the wires should be installed in pipe, do not lay bare wires, and there should be no connectors in the middle of communication and network cables;

● All cables must be installed in correct place, better to prepare extra length (1.5m-2.0m), the lines must be clearly marked, so we can distinguish and connect correct cable between devices.

● Install high voltage and low current cables in same slot is prohibited, remember to separate the cables and the distance between two types cable should be more than 0.5 meters;

● For **wiegand card reader**, it's recommended to use RVVP 4*1.0 (2 cores for power, 2 for data transmission), if request feedback for reader LED light and beeper sound when swipe legal or illegal card, then we have to use RVVP 8*1.0, the distance between device and reader should be less than 80 meters

● For **exit button** we can use RVV2*0.5。 Network cable should be CAT5E or higher.

● For **RS485 reader**, it's recommended to use RVVP 4*1.0, and the distance between device and reader should be less than 800 meters.

● For **lock**, the cable is RVV6*1.0 (4 cores for lock, 2 reserved), if the power output from device to lock is much less than 12V, it's better to use separate power adapter for lock.

Device Installation

● Access control device should be installed in the metal box, the box should be built more than 50 cm far from heavy electricity, lamps, air conditioners, heat sources, water and other interference equipment and do a good grounding measure, a spacious space is required to facilitate the work;

● If the access controller is placed on site, it is recommended to install the field control box on the ceiling of the room, close to the manhole

● Common reader mounting gang box size: 86 gang box for 86 mm*86mm, 120 gang box for 120 mm*74mm

● It is recommended to use a non-switched linear DC power supply as the reader power source to ensure optimal sensing distance. When the device and the electric lock distance is more than 100 meters, it is recommended to use a separate power supply, the lock and device power supply should common grounding

● In order to ensure the normal status of the reader, input power should be 12v±10%, the distance between two card reader should be at least 30 cm or more;

- The reader sensing distance is susceptible to metal and other materials, if installed on metal materials, it's recommended to install appropriate thickness of the plastic gasket at the back of card reader;
- In order to ensure the long-term use of devices, better to install the card reader in the rain and sun protection environment, if install outside better to do a good anti-rain measures, such as the acrylic cover and do waterproof silicone treatment.

Access Control System Structure

Note: The specific wiring and terminal definition if it is different from the site terminal (considering the device customization and upgrade, etc.), please refer to the device user manual.

1. Common access control system structure
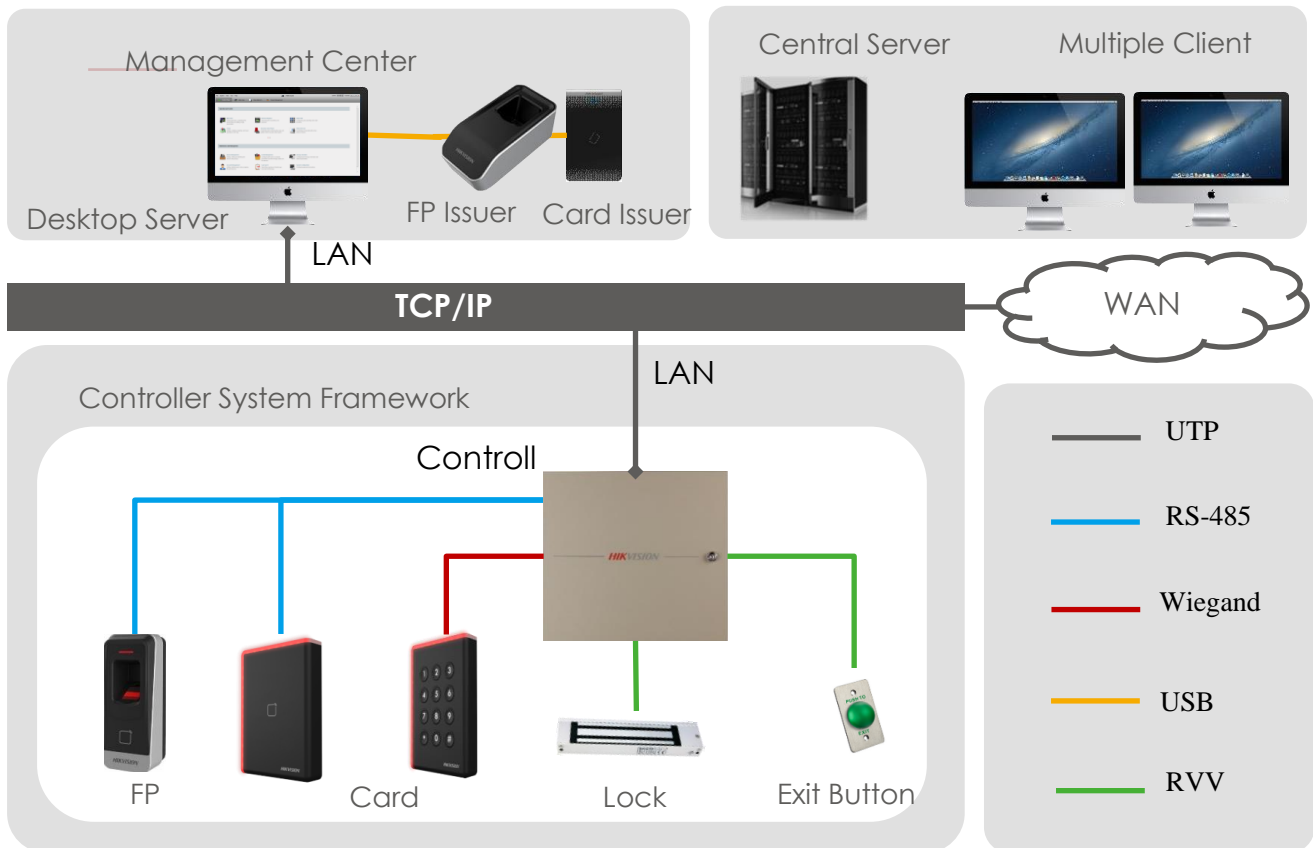
- Recommended structure: Access controller communicate with server/PC via TCP/IP protocol; access controller communicate with card reader through RS485 protocol.
- For access control point, normally we have single and dual direction, for single direction is to swipe card for entrance and press exit button for exit, dual direction is swiping card for both direction.

2. Access control system sample installation
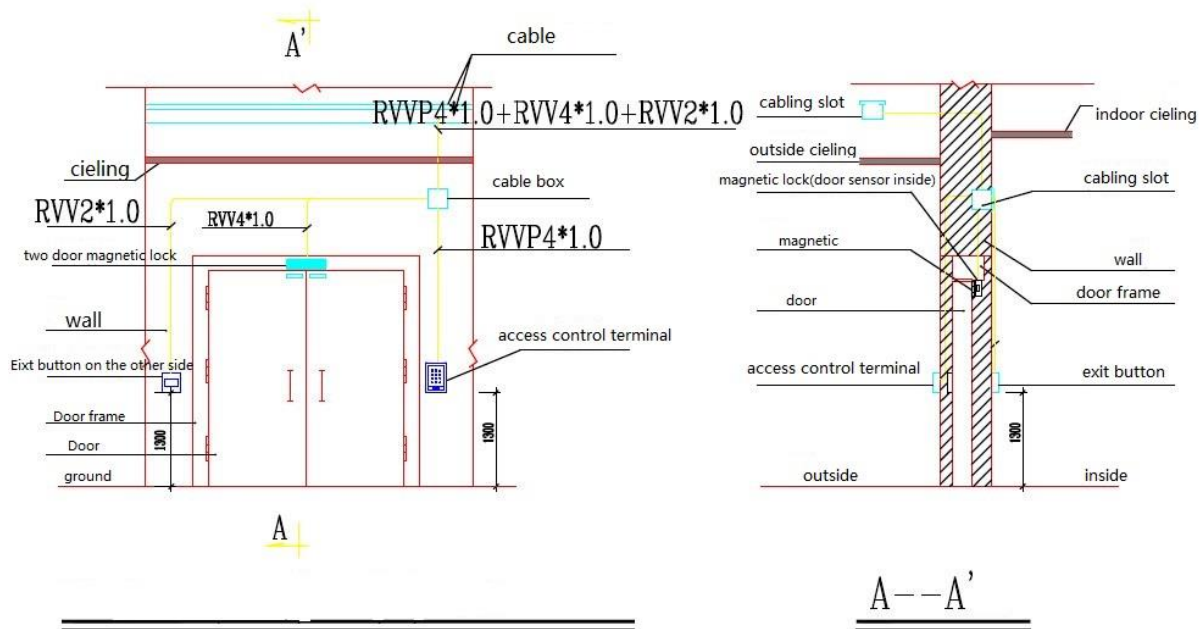
Take two door single direction access control point for example

- Card Reader, exit button are generally installed in the height of 1.3m from the ground, the electric lock installed in the middle of the door frame, note that the iron block installed on the doors should be aligned with the electrical lock, or the electric lock indicator will show errors.
- Cable generally installed on the ceiling and in the pipe

3. Device wiring

3.1 Access controller connect to DS-K1100 series

- RS485 reader

Two-core power cable of the card reader is PWR (red), GND (black) respectively connected to the access controller on the +12v, GND, two-core signal cable RS485+ (yellow), RS485-(blue) respectively connect to the controller of the RS485+, RS485-. If there are multiple RS485 readers, connect all of them to these four ports.

Each reader should have a unique dial code for dip switch, Dial code 1, 2 corresponds to the door 1 of the entrance and exit, dial 3, 4 corresponding to the door 2 entrance and exit, etc.
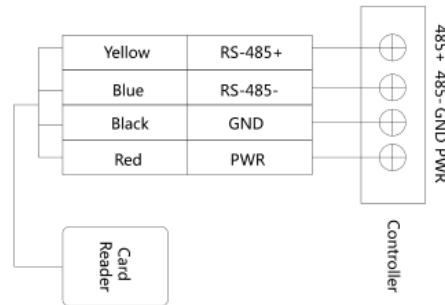
● Wiegand card reader

Card reader's two-core power line PWR (red), GND (black) connect to the access controller +12v, GND, five-core signal line W0 (green), W1 (white), Beep (purple), Red led (orange), Blue led (Brown) respectively connect to the controller W0, W1, BZ, ERR, OK.
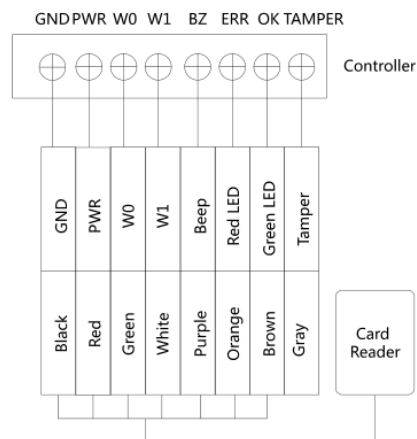
Note 1:

If the access controller wants to control the beep sound and led light of the card reader, OK/ERR/BZ wires must be connected properly, if the OK/ERR/BZ wires are not connected, device will also work with GND/PWR/W0/W1 4 cables connected, but the legal card and the illegal card cannot be identified by the reader LED color and buzzer.

Note 2:

DS-K2601 support maximum 2 RS485 readers and 2 Wiegand readers;

DS-K2602 each door support maximum 2 RS485 card readers and 2 Wiegand readers, in total support 4 RS485 card readers and 4 Wiegand card reader;

DS-K2604 each door support maximum 2 RS485 card readers and 1 Wiegand reader, in total support 8 RS485 card readers and 4 Wiegand card readers.

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3.2 Connect to electric lock

Note:

Magnetic Locks: Power on Lock (suction), power off unlock, normally closed type;

Positive lock (electric bolt lock): Power on lock (lock bolt eject), power off unlock (lock bolt retracted), normally closed type;
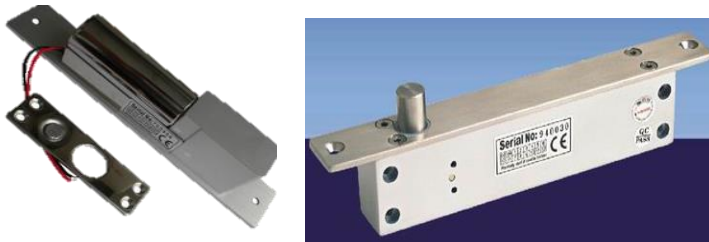
Cathode Lock: Power lock, Power lock, the default is normally open type.
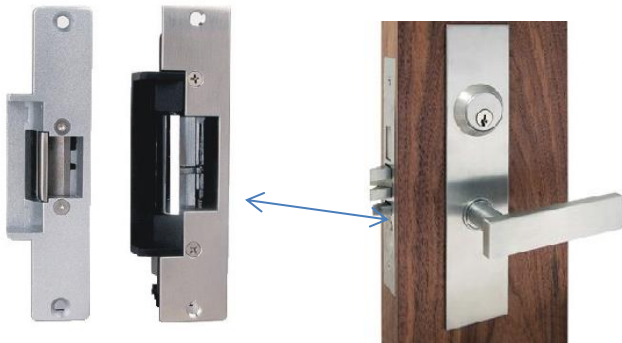
● Single door magnetic lock/Positive lock

The magnetic or positive lock two power cables(red positive black negative) are connected to the controller Lock +, Lock-.
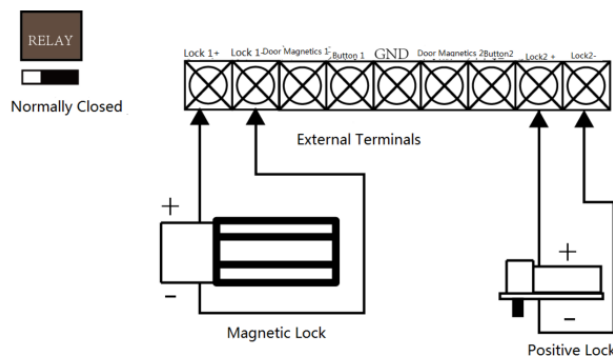
- Cathode lock

The two power cables (red positive black negative) of the cathode lock is connected to the Lock + and Lock- of the controller.

Cathode Lock
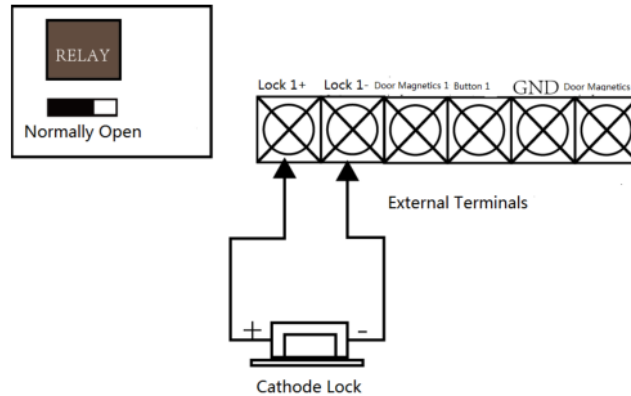
3.3 Connect to fire alarm linkage

Fire alarm linkage integration requirements: when the fire signal come, access control system will link door open automatically. There are two main types of linkage: software linkage and hardware linkage, in general, we have to use hardware linkage to achieve integration. Briefly introduce the key components under the hardware linkage mode: relay.

At present, the most commonly used relays are electromagnetic relays,

No (normally open) status: The status of the relay is disconnected when no power

NC (normally closed) status: The status of the relay is connected when no power

The basic working principle of the hardware linkage is that the power supply circuit of the electric lock is cut off by the relay, and the door is opened. Therefore, we only need to connect the fire relay to the power supply circuit of the electric lock.

- Dry contact(ON/OFF) signal

Connect 2 fire alarm cable direct to **Fire Alarm Interface** of access controller
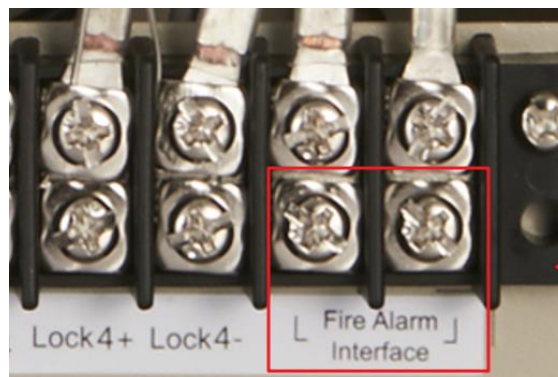
- 24 voltage signal

Use a relay(purchase from local market) to transfer voltage signal to Dry contact(ON/OFF) signal, then follow step above. Please select correct relay according to fire alarm system output signal voltage.
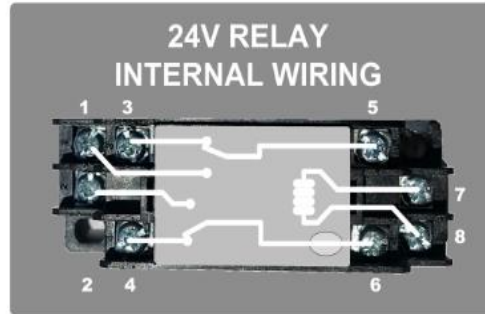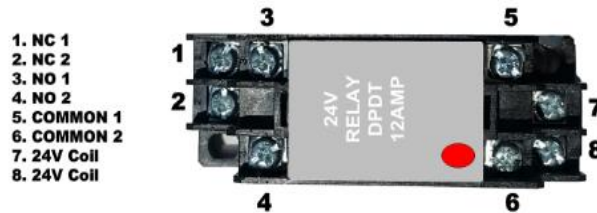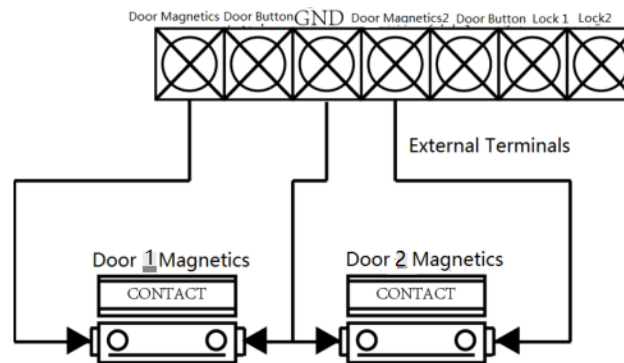

3.4 Connect to door sensor

- Single door

Check the label on the door for sensor cable (2 pin, please notice **door sensor signal is different from lock status signal,** we need door sensor cable), connect 2 door sensor cables to **Door Magnetic** and **GND**
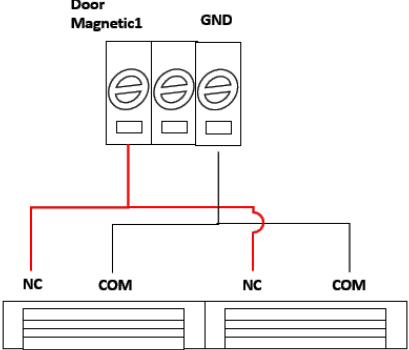

- Double-door lock

Here we have 2 types, NC wiring and NO wiring

i) NC wiring

When any door open, upload to controller a connected signal.

When two doors closed, upload to controller a disconnected signal.

ii) NO wiring

When any door open, upload to controller a disconnected signal.

When two doors closed ,upload to controller a connected signal.
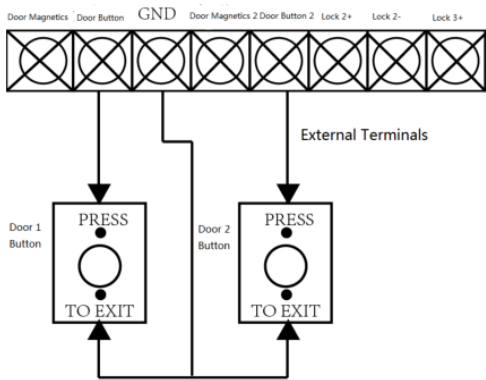
Note 1:

The door magnetic signal can feedback the status of the door, the electric lock will also work normally even door sensor cables are not connected but unable to view the real-time door status on e-map of software

NOTE 2:

The door sensor wiring method (NO or NC) must be the same as the door sensor type on software configuration.

3.5 Connect to exit button

4. Lock installation

● Magnetic lock installation (normal)

Note: When the door frame width is sufficient to install the lock body, we don't need LZ bracket, install magnetic lock body directly on the door frame, iron plate installed on the movable door

Note: If we install magnetic lock on glass door, we need a U bracket for fixing the iron sheet. glass door is mounted with a magnetic lock and the door can only be opened one direction.
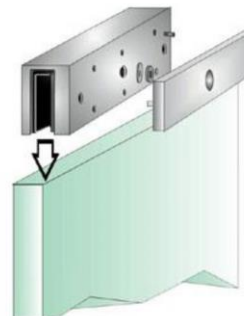
- Magnetic Lock Installation (LZ bracket)

When door frame width is not enough to install lock body, we need LZ-Bracket.

- Positive lock (electric bolt lock)

Note: The first picture is the general installation method. The second picture is the glass door without bottom frame, then use down U bracket for installation. The third picture is the glass door without upper and bottom frame, then use up and down U bracket for installation.
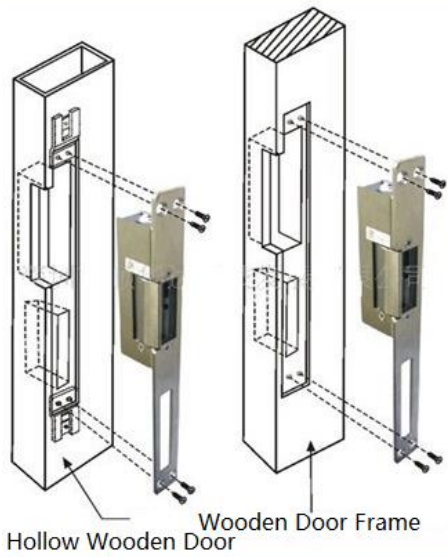
● Cathode lock

Note: The cathode lock refers to the latch that is mounted on the door frame and we do not provide a mechanical lock part

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