Installation and Wire Connection Instructions for Fingerprint Access Control System

Version: V1.0   Date: August 2, 2013

I. Installation Instructions

1. 1 Precautions

This device is made in strict compliance with related standards. Please read the following carefully and completely before installation to ensure the best user experience and to avoid any accident or damage due to improper operation during installation.

i. Please turn off main power switch before installation to avoid any damage to this device or key components due to power line.

ii. It is suggested to maintain the length of bare terminal within 5mm and use wires in different colors to avoid any damage to this device due to unintended connection.

iii. In case it is necessary to install the device close to strong static field or in winter, grounding is required before connecting other wires to avoid any damage to this device due to static electricity.

iv. The power line should be connected after connecting all other wires. In case of abnormal operation of the device, please turn off main power switch before troubleshooting.

v. It is suggested to use 12V/3A DC power supply or above and 12V/1.5A electric lock or above. In case parameters of electric lock exceed this limit, please contact our technicians for help. The current of device power supply should be 1A greater than that of electric lock, otherwise, it is impossible to turn on electric lock or the device might be damaged.

vi. In case of a long distance between power supply and the device, it is not allowed to replace power line with network cable and other wires. Please select appropriate power line according to transmission distance, which may result in voltage attenuation.

vii. In case RS485 port is used, please select special 485 cable and active RS232/485 exchanger and arrange wires in bus structure. In case transmission distance is longer than 100 meters, it is suggested to add 120Ω terminating resistance in parallel connection to 485A and 485B.

Note: any charged wire might cause damage to the device, and we do not offer warranty for damaged device due to improper operation before shutdown.

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II. System Diagram
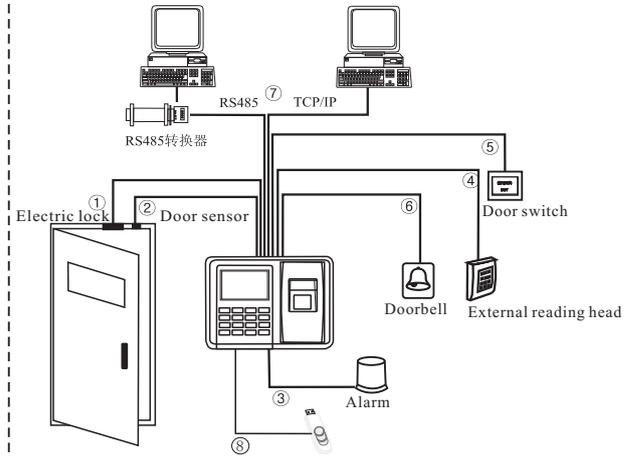
Main Functions of Access Control System:

① When the user is verified successfully, the device will send signal to unlock the door.

② Door sensor checks door status automatically. In case the door is opened or not closed unexpectedly, it will give the alarm (digital signal).

③ In case the device is uninstalled by force, the device will send signal to give alarm.

④ External reading head

⑤ External door switch to facilitate opening the door indoors.

⑥ External doorbell

⑦ Connect to PC via RS485 or TCP/IP to manage more than one terminal device.

⑧ Flash drive: download or upload data.

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III. Install Electric Lock

3.1 Wire Connection

The installation of electric lock depends on actual condition. When selecting power line, please consider internal resistance of transmission line! Please make sure the electric lock is fixed and well connected. Do not incorrectly connect electric mortise lock and magnetic lock. The unnecessary bare wire should be cut off and then wrapped separately by insulating tape. Time delay of electric mortise lock can be adjusted if necessary.

The device can be connected to both normally open lock and normally closed lock as long as different terminals are used, which results in status change.

NC lock: remain closed circuit normally and switch to open circuit in case it is unlocked by force, which results in status change..

NO lock: remain open circuit normally and switch to closed circuit in case it is locked by force.

GND: electric circuit connecting to the earth.

The electric lock varies in specifications, therefore, they needs to be installed according to actual conditions.

Note: The electric lock is controlled by relay. When installing electric lock, there are two options: safety in failure state or security in failure state;
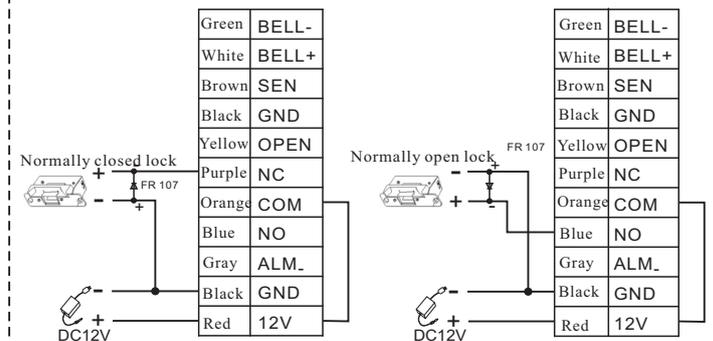
"Safety in failure state" means that in case of no power supply (due to interruption of power supply or malfunction of controller), the door automatically opens and it will not be closed unless power supply resumes. The typical application of safety in failure state is electric door sensor. The open do not open without power supply. "Security in failure state" means the door is used for the sake of security in all circumstances. The typical application of security in failure state is electric lock. The door can be opened manually indoors instead of outdoors in case of no power supply. It is suggested to connect electric lock to a separate power supply in the following circumstances:

1. The power supply for electric lock is 12V, and the current of device power supply is not 1A greater than that of electric lock;

2. The nominal voltage of electric lock is not DC12V;

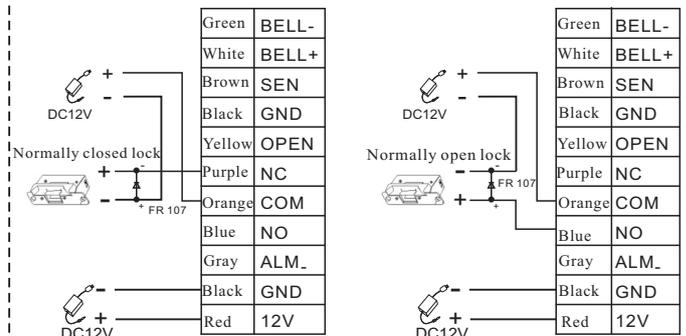3. The electric lock is far away from the device.

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Note: In order to avoid self-inducted EMF of electric lock during opening or closing the door which may affect access control system, it is suggested to add FR107 diode came with this device (without mixing up positive and negative pole) in parallel connection to electric lock during wire connection to release self-inducted EMF.

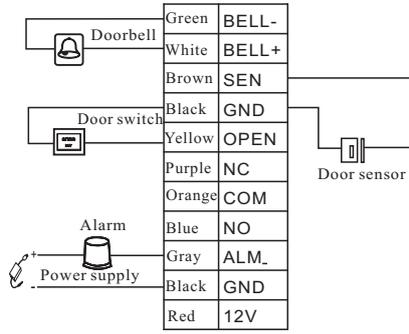### 1. One Power Supply for Device and Electric Lock

### 2. Different Power Supply for Device and Electric Lock

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IV. Install Other Devices

Doorbell	Green	BELL-
	White	BELL+
	Brown	SEN
Door switch	Black	GND
	Yellow	OPEN
	Purple	NC
	Orange	COM
Alarm	Blue	NO
	Gray	ALM-
Power supply	Black	GND
	Red	12V

Note: The alarm should be connected via negative pole, and it should share same ground wire with the device.

V. Wiegand Output

This device is equipped with standard Wiegand 26 output, therefore, it can be connected to most access control on the market as reading head.

Access Control	Green	WG-
	White	WG+
	Black	GND
	Purple	485A
	Blue	485B
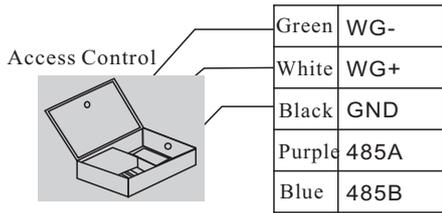
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VI. Wiegand Input

This device is equipped with standard Wiegand input, therefore, it can be installed indoors and connected to external reading head outdoors to jointly control electric lock.

| Green | IWG - | DATA- |
White	IWG+	DATA+
Black	GND	GND
Red	12V	12V
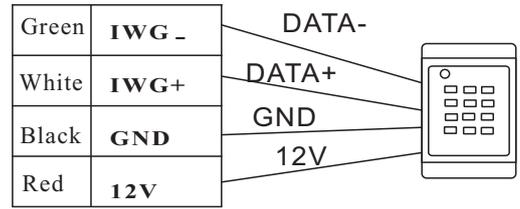
1. The distance between device and access control or between device and card reader should be no more than 90 meters (in case of too long transmission distance or interference affecting operation, it is suggested to use Wiegand signal extender).
2. No matter whether or not the device shares same power supply with access control or card reader, it is necessary to make sure they share ground wire so as to ensure stable Wiegand signal.

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VII. Communication

1. Via RS485

In case RS485 port is used, please select special 485 cable and active RS232/485 exchanger and arrange wires in bus structure. Please refer to below figure.
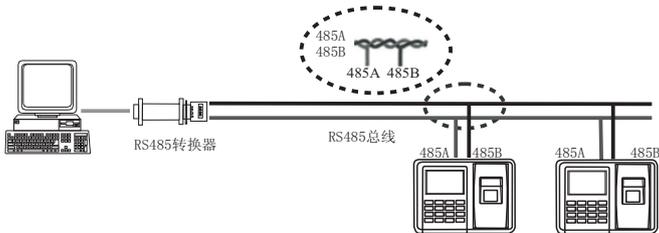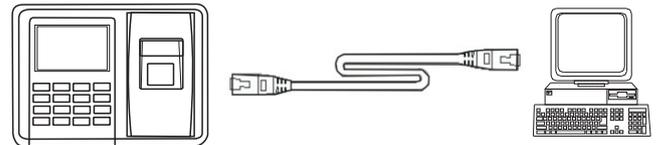

Terminal definition table:

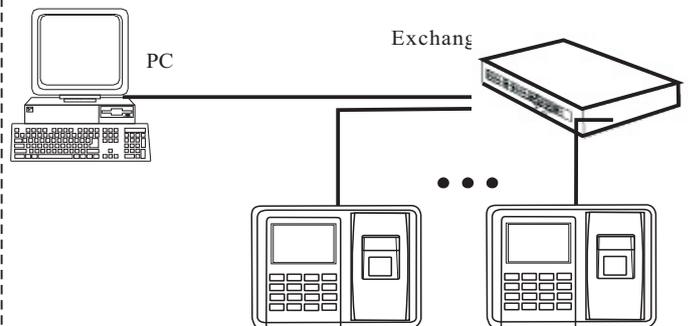| Terminal Name	PC Port
485A	RS485 A
485B	RS485 B

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2. Via TCP/IP

Connect this device directly to PC or connect both of them to network.

1) Connect Device to PC via Cross-Ruling

IP address: 192.168.1.27
Subnet mask: 255.255.255.0

2) Connect Device and PC to Network via Exchanger/Concentrator

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