Application of Wireless Sensor in Entrance Guard System

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ABSTRACT

Networks adopt a variety of means in the current entrance guard system such as telephone line, bus, dedicated line, wireless. This paper studies on wireless, which can overcome the disadvantages of other networks and also has two advantages.

I. INTRODUCTION

Access control system is a high-tech security facility in recent years which is widely used in China, now it has become a symbol of modern intelligent building. In the growing emphasis on business intelligence and security today, many enter certain important institutions, research laboratories, important roles in public sector control centers, archives, as well as places such as airport staff, access authorization control. Our research on the access control system started late, so access control system is more traditional. The development of access control systems is inseparable. At present in accordance with control ways, access control systems in China mainly include fingerprint, passwords, radio frequency card access control system, which is the most widely used. The price of reaction access control systems and fingerprint access control system in China is 10%-50% lower than the similar abroad products, the reliability and safety of which is less. The technology of confidential IC card and reader device and security remained relatively backward state. Currently most of the access control system is a simple door switch control, which is not real-time display control system for gate control and security, which can only meet the requirements of low safety and basic control needs. However, in special and high demanding occasions, you need to take more security control system in place. China has shown rapid development of long-term trends and access control systems design and exploitation has been rapid development.
II. OVERVIEW OF THE ACCESS CONTROL SYSTEM

(1) Principle Of Work

Access control: the card reader is used to read the card information of charge people and convert to electrical signals that are transmitted to the controller, which recognizes if a cardholder is authorized according to the information received.

If it is the same as the login information stored in the controller, the controller will sent the signals, which control devices to lock or open; otherwise keep blocking. In addition access control system with network will receive authorization information sent via computer by system administrator and send credit card records to the computer. A simple access control systems can achieve to manage one or two doors, which is consisted of a single controller. Complex access control systems, such as building access control system, requires more than one controller to connect to your computer over a network to accomplish the whole building access management. Access control system management is responsible for information analysis and processing in the system.

(2) System Characteristic

1. RELIABILITY

When the network is connected, the router ensure proper communication each other. At this time, community users with the proximity card can complete credit card through the induction at the lock. Access control systems will read the user information of the sensor tab, and send the message to the main control center of wireless access by routing nodes, which verify the card authorization in order to determine whether to allow the card to open the door according to a preset information. When the network connection is disconnected, the access control work is offline, which does not affect the access control system to work properly because you can judge the information card with the access control function storing information to decide whether to open the door or not. At the time credit card records will be saved inside the lock that can also save up 500 credit card records, which will automatically upload to the main control center and store once the signal returns to normal. When it comes to extreme situations, you can also open the door urgently with password or mechanical key. Therefore the system ensure the reliability of the door in a variety of situations.

2. INSTANTANEITY

The system can be recorded and monitored in real time at running time.

- Record real time: all actions, time, personnel, credit card, web site operation and alarm messages can be recorded in real time, that is able to understand where and when it happened and save them in the database.
- Monitor real time: the system connected to access controller through a variety of related serial port for monitoring each access card information, access power, switching, communications and insurance information of each entrance guard in real-time. Even if system has the low battery, it can still continue to work for a week.
III. DESIGN OF ACCESS CONTROL SYSTEM

(1) Basic Management Function

1. DATA AND INFORMATION MANAGEMENT

Collect data of access control and monitoring while collecting and storing; query data for basic information of the community staff according to defined time and people such as your name, gender, place of work, contact details, room number, etc.

2. STAFF MANAGEMENT

Data entry for community residents including name, gender, work and provide functions of edit and query.

3. DEVICE MANAGEMENT

Remote-controlled equipment, customize the device setting such as setting the traffic pass time period. Can be set many other functions of Only In Not Out, Normally Open.

4. SYSTEM MANAGEMENT

Set and add multiple administrators, which can customize the system settings, account and password settings.

5. CARD MANAGEMENT

One-Person One-Card, one man corresponding to a card with the corresponding permissions. Register before using the card that can be set passage of time according to the actual situation.

(2) The Function Of Remote Unlocking

The control center is equipped with remote door in the system, in which system open the door by using the hotkey and server uses the APP software or b/s mode.

1. ACCESS DOOR CONTROL

Residential click on the OPEN button to open the gate of community with APP in the mobile phone or user password and detect whether the vehicle pass via infrared sensor. As soon as the car passes, gates will be closed automatically after the five seconds delay, if car is still not be detected after more than 20 seconds, the system will automatically close the gates. Moreover, in order to facilitate the community owners, they can enter normally with clocking without permission.

2. INTERIOR DOOR CONTROL

For the convenience of visitors into the community's needs, the system supports an indoor remote turn: in the case of community users prior knowledge of the visitors visiting, you can see visitor information to confirm the identity of the visitor by video surveillance equipment in the system.
The Function of System Security

1. DATA ENCRYPTION

The access control system with wireless sensor technology can be used to support multiple encryption such as 3DES, DES, AES, etc. So in the process of data transmission, the information is not tampered so as to ensure the security of data transmission and protect the data to transmit to the control center exactly and safely. In order to ensure community safety, the system is also equipped with anti-sending equipment, to track person and prevent other people from trying to enter the community after borrowing, stealing or picking up another card to threaten personal safety and property security of community residents.

2. ANTI-SENDING FUNCTION

System cannot open inside door before outside door is not closed. If abnormal phenomenon occurs such as access system reader, keyboard, and monitoring equipment broken or invalid induction card and wrong card password, control center will immediately sent SMS and alert to remind duty person as getting information and meanwhile system will start site of VCR and searchlight equipment.

3. MULTIPLE ALERT FUNCTION

- General alarm
  When many conditions happen as illegal intrusion, credit card, open door, access control system failure, offline device and low battery, the control center screen will display the corresponding message and system will alert and send alarm messages to security person in mobile. If illegal intrusion event happens, you can use hot keys to alert quickly after confirmation. Scene condition will be sent to the local public security department, which will rush to the spot after receiving alarming information.

- Fire alarm
  Fire always happens when people don't pay attention and it has serious consequences. In order to reduce the damage caused by fire, the system support fire alarm function. Systems connect smoke sensor and temperature sensor of community building through the D/A function, by which control centre collect data of site sensor device and analyze the data. If the conclusion of the live fire obtain after analysis of data, the control centre will immediately send alert instructions to each alarm and issued instructions to access controller to open building doors and inform community residents evacuated.

IV. CONCLUSION

With the increase of residential, residential property management becomes important increasingly. Traditional community security management has many problems such as security personnel on duty throughout the day, which do not meet the safe, fast and convenient modern management concepts. Intelligent access control system is the system in which anti-theft door is installed at each unit and control center manage. Tenants at home can realize on the security
door remote control, who can check before you can enter the building so as to limit the illegal access. Intelligent access control system can provide good protection for community safety and provide a full range of security services to owners through linkage of the systems.

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