Sensors and Alarm System

Electronic access control (EAC) systems restrict users' access of buildings or zones. The system only grants access to users with valid and authorized credentials. The main idea is to keep unauthorized persons outside of the boundary. However, intruders always find their way to sneak into the restricted area. Thus, various detectors are developed to work with EAC systems, to keep an eye on the restricted area. These detectors are normally standalone sensors. They are always hidden or beyond the reach of intruders to avoid any exploitation.

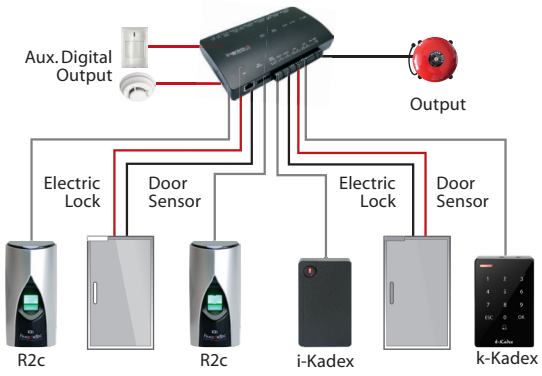
Building Perimeter Detection System

For building perimeter detection systems, the most common example is a door sensor. This 2-piece magnetic switch installs at the doorframe and door leaf separately. The wire from the main unit (attached to doorframe) connects to the access reader/controller. When a door closes, they get close to each other and develop a "close circuit", and the reader/controller/alarm system will know that the door closes normally. Vice versa, the magnetic switches move apart from each other and develop an "open circuit" when a user verifies to open doors. The reader/controller accepts this is a valid access but only for a certain time period, for example 5s. Reader/controller will trigger an alarm output if the door remains open for more than 5s. This mechanism forces the last verified user to close the door well to prevent tailgating. In case of intruders forcibly opening a door, reader/controller senses the abnormal "open circuit" signal from door sensor, and triggers the alarm output immediately.

Interior Volumetric Detection System

In case intruders already bypass the door sensor and get into the secure zone, it is important to have the second layer of security, the interior volumetric detection system to identify them. Thus, a motion detector is the best sensor to do this job. Access is prohibited for some restricted area after the normal operation hours. The door is locked and no access is granted during the time period. The intruder tends to break into this zone because there is nobody blocking their way. Install and activate the motion detector at this area, so it becomes the invisible security guard to look after the zone. It uses K-band microwave technology and uniform sensitive signals to sense any volumetric changes in the zone. Whenever it detects the movement of the intruder, it outputs alarm signals to the reader/controller/alarm system quietly. Security officers can then take serious action to arrest the intruder after they know where he is.

There are invisible intruders, for example fire or smoke, which are more dangerous than the sneaked-in intruders. These incidents are unpredictable and it can start from the interior anytime. It is not feasible to have security guards monitor fire incident all day long, at all points of the building. Instead, you can install another type of interior volumetric detection system, for example smoke/heat sensor, around all corners to detect smoke or fire once it started. The smoke/heat sensor is a photoelectric application to sense heat or smoke from its environment. It triggers its internal alarm when it detects a raise in room temperature more than its preset standard, or excessive amounts of carbon particles (smoke). It is DC-powered with a battery inside it as backup power. Beside its internal alarm, it also outputs signal to the reader/controller/control panel to alert the security/safety officers.



However the detector itself cannot take any actions towards the intruders. Therefore it must be connected to a control panel, pictured here with the Ingressus Controller, where it can produce visual and audio alerts to draw the security officer's attention. The linkage between sensor and Ingressus control panel is through electronic pulses, also called a relay signal.

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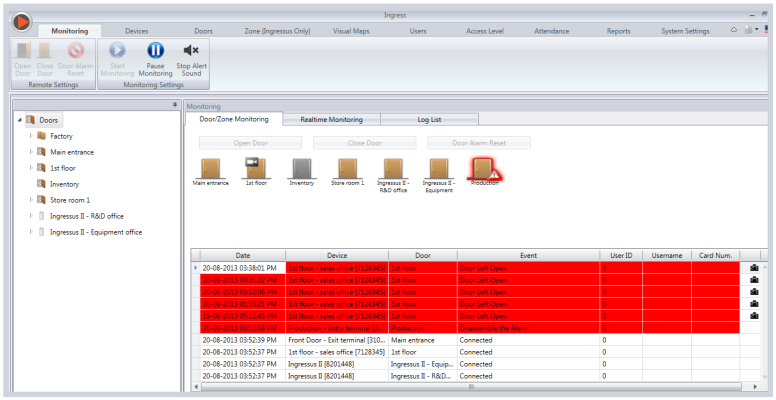
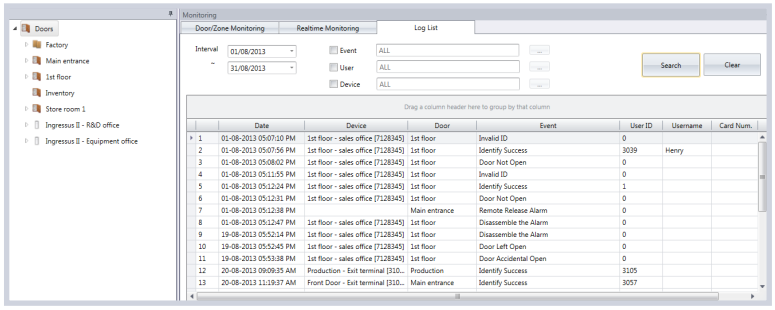
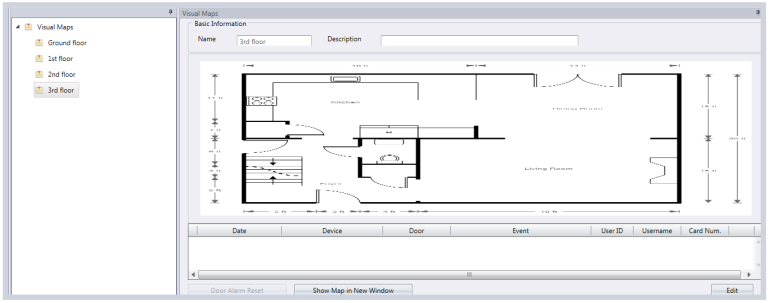
The combination of detectors and the Ingressus controller makes a complete monitoring system. The monitoring system will have UI for monitoring purpose, where security officers can look at every path without having to be present there. Older EAC monitoring systems used a large electronic panel with multiple color LEDs mounted on it. Security officers must undergo professional training to understand the panel and LED indication before they are fit for the job.



The modern Ingressus Access Control system integrates with Ingress software perfectly to turn everything into PC user interface (UI) as a complete monitoring system. The UI is more interactive and comprehensive to security officers. Plus there is no longer boring LED flashing on screen, instead it can display more information. A good monitoring system is able to display line-by-line records of normal and abnormal activities. Security officers know who the users are passing by any doors easily. Any abnormal activities, for example, door remains open, door force open, smoke detected, etc., will be published onscreen to alert the security officers.

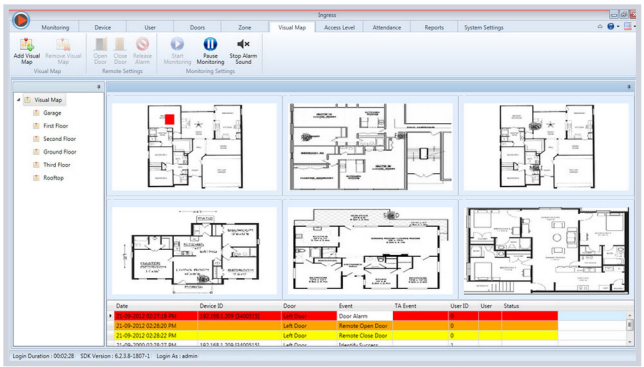


Furthermore, security officers can trace back the previous records of verification and door open-close mechanism from the Ingress software. This is an important feature in EAC systems to make sure nothing is left behind.

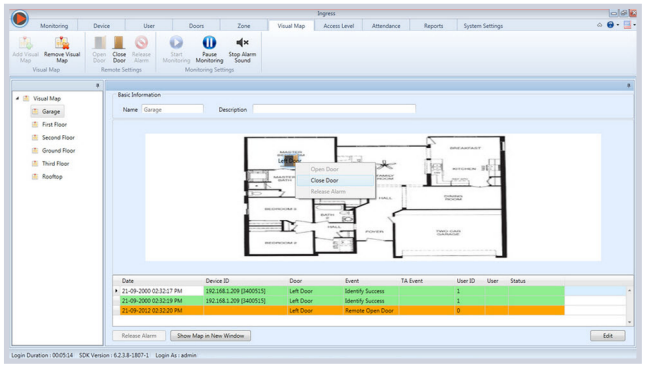


There is an option for Ingress Software to add in floor plan/map into the UI. Security officers can drag and drop the doors icons on UI, to have a better view to monitor. In a standard control room, there are multiple screens/LCDs, which publish individual floor plan/map so security officers never miss any of them. Security officer can view by individual floors:

Or to have maximum 9 floors on the main screen:



And Ingress software allows security officer to open doors remotely from the UI itself:



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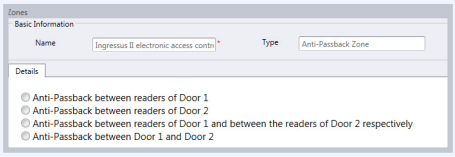
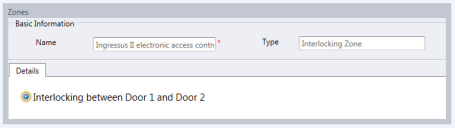
Beside the visual alerts, Ingress software can also trigger the PC speakers (both onboard buzzer and external speaker) to produce alert sound to alert the nearby person to take immediate action. Security officers can turn off/ shut down the alarm of reader/controller from the UI if it is confirmed as a nuisance alarm.

In terms of handling, security officers can enable/disable certain access control rules in the Ingressus electronic access controller, for example antipassback, interlocking, activation of smoke/heat sensor and motion detector from the Ingress software directly:

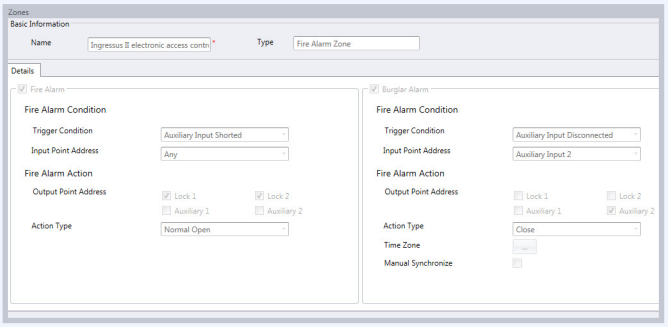
Antipassback

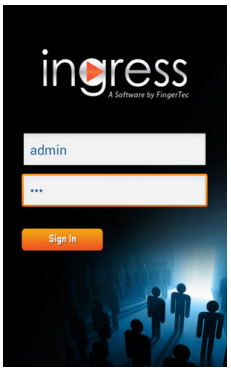


Interlocking

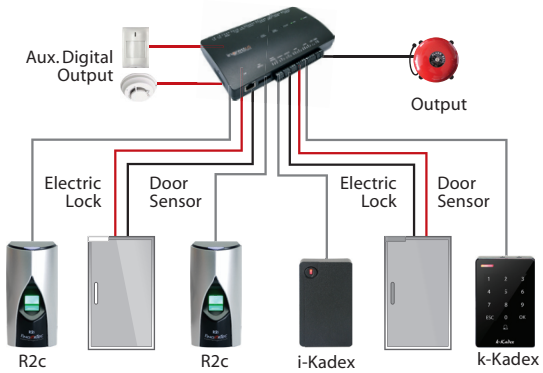


Smoke/heat sensor and motion detector



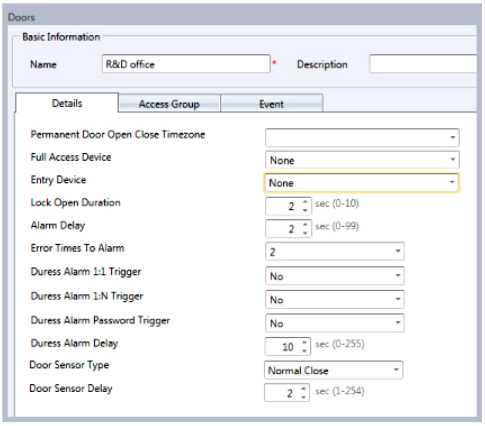


Some of the enhanced monitoring system allows integration with SMTP email server and smartphone applications. In case it receives alarm signal from sensor, it sends an email to the security officers, or push notification to their smartphones. Security officers will never miss any of the alarm reported by the sensors even when he is away from the software screen. The Ingress mobile apps is available to download from Google Play Store and Apple App Store.



Besides triggering the monitoring system to make visual and audio alerts, FingerTec Ingressus Access Control System can link up to high end alarm system (with phone/SMS features) directly. The high end alarm system can make phone calls or send SMS to the legal authorities or 3rd party security company to report intrusion, after it receives alarm output from the Ingressus Electronic Access Control System.

Interior Point Detection System



The interior point of detection system normally is a physical wall mount button installed within a secure area. Users can press the button to alert the monitoring system or a siren in case intruders are detected visually within the secure area. This is also called a duress alarm. However, the user might not be able to press the duress alarm button if intruders tailgate or threaten him/her to open the door. In some installations the duress alarm button is hidden, making it inconvenient for all users.

In Ingressus access control system, you can configure a special verification method or secret password to trigger the duress alarm. This is called a duress fingerprint or password. You can individually set duress alarm trigger methods for every door in Ingress software.

The duress alarm trigger method must be different from the normal verification method to avoid nuisance alarm. For example, users place finger to scan to gain access (1:N method) during normal operation. You can select to use "Duress Alarm 1:1 Trigger" to trigger duress alarm. In case an intruder threatens a user to unlock the door, the user can key in his/her

ID followed by fingerprint scanning. Ingressus access controller receives "special verification method" as "duress alarm", and it will output signal to the alarm system and Ingress software. Security officers can receives the alert at the Ingress monitoring screen, and alarm system can proceed to dial to legal authorities quietly.

Besides the verification methods, Ingressus access controller accepts password verification as duress alarm. Users can change and use a password to unlock the door to gain access, while the duress alarm is activated quietly to signal the Ingress software and alarm system.

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