

Educational Establishments

Perimeter and Intruder Security



Introduction and facts

Keeping students, teachers, visitors and educational facilities safe from criminal activity is a task which must be taken seriously. GJD have created this white paper to provide recommendations on how intrusion detection technology, combined with IP video surveillance systems, integrate to provide versatile security solutions for educational buildings.

An integrated security system including perimeter detection devices, advanced lighting solutions and video surveillance is a key factor in protecting staff, students, visitors and property from intruders and to help alleviate criminal activities.

Things to consider when choosing a security solution

Layered Detection

Private and government educational institutions of all sizes do their best to protect and secure people and valuable assets. Preparing for possible acts of crime will greatly reduce the risk in schools and universities. When thinking of perimeter protection physical barriers are the first choice. However, when used alone a physical barrier will not offer complete protection.

For an effective security solution, a layered system of physical and electronic perimeter security offers a reliable and effective approach. With electronic detectors, the user will be informed of the intrusion as soon as it has happened and can take relevant action. One of the benefits of external perimeter protection is the early warning of potential problems.

Network (IP Solutions)

External IP detectors and LED illuminators are designed for use with professional video surveillance systems. IP devices use Power-over-Ethernet (PoE) or low voltage power to connect and send IP signals over the network to integrate with most major Video Management Systems (VMS) and IP cameras. This creates powerful security solutions where recording starts automatically.

The cameras are directed to the location of intrusion and guards are alerted with detailed alarm information. Alarm signals via IP to the VMS is perfect for large installations that need to monitor all cameras.

IP detectors provide direct IP surveillance, alarm signals travel peer-to-peer to directly communicate and control cameras, the detector provides an alert for the guards and the system sends an alert. This type of security provides detector triggered video surveillance recording and automated illumination.

IP perimeter security offers low installation and maintenance costs, quick deployment and remote access to view real-time recordings on PCs, Macs, tablets and mobile devices.

Video Surveillance

Video surveillance systems for schools and universities generally require distributed remote video monitoring at multiple sites, centralised PoE power management, installation and clear night vision provided by an IR camera solution. Covering all of these bases provides a more complete video surveillance solution for educational establishments.

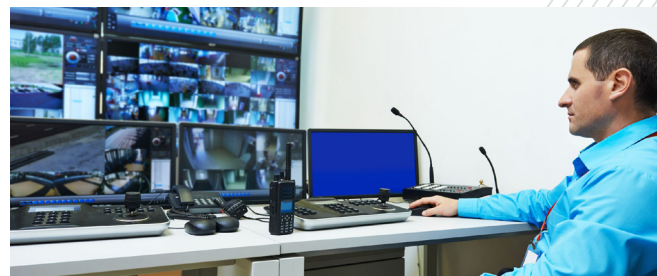
Applications

The type of detection will depend on the site requirements, for example the size and shape of the area. Choices include external PIR detectors, laser sensors, IR & WL LED illuminators and video surveillance.

External PIR detectors have a long life, are low maintenance and can be integrated with smart technology for enhanced value. For example, they also measure outdoor light level and ambient temperature.

Laser detectors offer precise and accurate presence detection using virtual curtains, walls and surveillance security zones. Laser detection operates with the highest level of precision for reliable intrusion detection.

External protection consisting of detectors, illuminators and cameras is a great intruder deterrent, providing reliable peace of mind to the user.



Layered Detection and Integration

External motion detectors and LED illuminators are crucial components for a security system. By integrating these separate technologies with video surveillance cameras, the site will benefit from one powerful security solution with versatile advantages.

Benefits

- ▶ Operation and maintenance costs reduced as programming can be made over the network resulting in fewer site visits
- ▶ Devices can be used in a variety of applications. For example activate lighting, trigger video surveillance systems, alert monitoring station, warn security guards and initiate video capture.
- ▶ Monitoring access points to detect intruders before they enter the property; which helps the security guards to be more effective
- ▶ Integrated security and lighting control to create bespoke solutions to suit specific campus requirements
- ▶ Minimise false alarms

IP detectors

- ▶ Send automatic intruder notifications to alert the monitoring station or communication device
- ▶ Trigger and control both internal and external lighting, as well as internal and external sounders
- ▶ Control and start video surveillance, providing alarms and camera movement, or place a marker on the system log
- ▶ Deter against unlawful access on campus, as well as provide early warning of an intruder
- ▶ Installed as a standalone device, or easily interfaced with an existing IP system



Infra-Red illuminators

- ▶ Infra-Red
- ▶ Covert lighting at night for surveillance systems
- ▶ Provides a black and white image at night
- ▶ Longer range coverage than most integral IR
- ▶ Can be installed as a standalone device, or easily interfaced with the existing IP system



White-Light illuminators

- ▶ Provide true colour camera images at night
- ▶ Deterrent/security lighting
- ▶ Courtesy lighting
- ▶ Can be installed as a standalone device, or easily interfaced with the existing IP system



Without IR on



With IR on

Video Surveillance Solution

Many schools have an Ethernet network already installed. A fully digital IP video surveillance system provides the option to use existing Ethernet infrastructure to stream and view camera footage to the (Network Video Recorder) NVR; while some facilities will choose to update to a more robust 10/1000 network. The size and scope of the system requirements will be key to determining the recording solution. In addition, PoE switches can provide centralised power management for the edge PoE cameras. An end-to-end solution with the ability to scale should be a requirement when designing and choosing a video surveillance solution.



Distributed remote video monitoring is a very important component of school and university campus projects. Video decoders connected to a HDMI monitor provide remote monitoring for IP cameras without the need of a power-consuming PC, as well as being able to decode live video remotely from the NVR and still being able to perform remote playback and back up.

Vandal resistant cameras are a smart choice for campus projects. Tamper detection, a setting within the IP camera that alerts when the camera is being tampered, can also provide extra awareness for the surveillance unit. Additionally, embedded intelligent video surveillance allows for motion and audio detection, specifically for use in classroom applications at night or on the weekend. This intelligent detection can notify the NVR with alarm snapshots for instant playback.



IR solutions that provide clear video at night are one of the most important features required for school projects. At night IR cameras and illuminators provide clear video allowing for full surveillance; which would be impossible for the naked eye. IR illuminators act as an additional light source for large open fields and areas. IR cameras can also be installed in classrooms and the IR illuminator can then be used as additional support at night time.

Gate control for vehicle access and parking management will help limit and manage access to campuses. Automatic Number Plate Recognition (ANPR) utilised through the camera can allow or deny access to the school or university and log date and time information.

School and university video surveillance systems can be physically set up in a variety of ways. NVRs can be stored in a rack cabinet in secure locations at each building and networked to a central location for viewing all properties with a single interface or operate individually through a monitor. In addition, create a TV wall display for distributed remote monitoring, backup and playback.



Benefits of Internet Protocol (IP)

Benefits of IP security systems for educational establishments

IP detectors, IP illuminators and IP video surveillance has become increasingly popular at educational facilities. IP technology ensures the site is future proofed for further integration, for example enabling the installer to easily add more cameras or additional detectors over the network. By combining GJD's external IP technology with video surveillance equipment, security officers will receive real-time alerts; which will enable them more time to react to various situations on campus.

IP surveillance for VMS systems

IP detectors and IP illuminators connect through a server allowing remote control of video surveillance systems. This creates powerful security solutions where recording starts automatically, the cameras are directed to the location of intrusion and guards are alerted with detailed alarm information.

- ▶ Supports most VMS and IP cameras
- ▶ Cost effective maintenance
- ▶ Remote access via web based interface to view real-time recordings on PCs, Macs, tablets and mobile devices
- ▶ Alarm signals go via IP to the VMS, which trigger cameras, alert guards and automatically send emails
- ▶ Perfect for large installations that need to keep track of all cameras
- ▶ Use VMS e-mapping to insert an image of a facility with camera placement. Easily switch to live view of any situation by camera location using e-mapping features

Direct IP surveillance

IP detectors and IP illuminators connect directly via a PoE hub or switch, allowing detector triggered video surveillance recording and automated illumination. Advanced signal processing and unique optical systems provide accurate alarm capture along with IP data transmission.

- ▶ Alarm signals travel peer-to-peer to directly communicate and control cameras, LED illuminators, alert guards and automatically send emails
- ▶ Remote access via web based interface to view real-time recordings on PCs, Macs, tablets and mobile devices
- ▶ Low installation costs
- ▶ Low maintenance costs
- ▶ Quick deployment

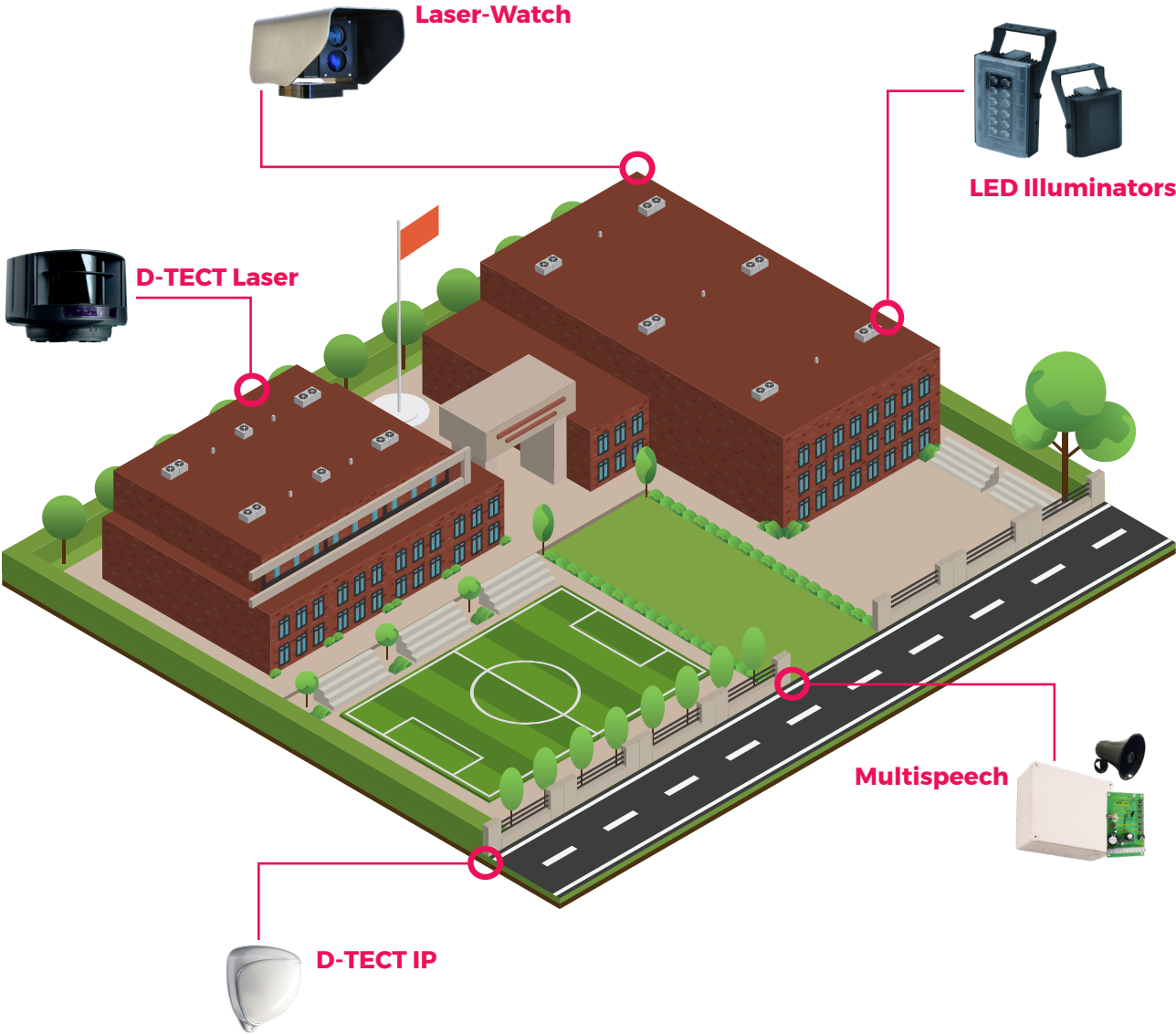
Quick and easy installation

The benefits of an IP based security system go beyond being able to program and make changes to devices over the network.

There are many advantages to the Systems Integrator including significantly reduced physical site visits and minimised false alarms.

Setting up GJD's IP detectors and IP illuminators is intuitive and made easy by using the web browser and digital test buttons linked to each event. This ensures each action is setup and performs correctly.

Types of Applications



Advanced Perimeter Detection

Using perimeter detection solutions will enable the school to receive early perimeter alerts before an intruder enters the campus. The Laser-Watch detector can detect up to 500m with the ability to program 20 independent alarm zones. The solution on the campus map shows zone 1 of the Laser-Watch triggering a pre-set position on a PTZ camera, zone 2 alerting a Turret camera and zone 3 triggering a pre-set position on another PTZ camera. This allows you to capture video surveillance footage in real-time and at the precise location that the intruder is attempting to enter the campus.

You can also use the Laser-Watch to trigger lighting for the cameras to see clearly at night or to act as a security deterrent.

Area Lighting

Sufficient lighting for pathways around a campus is extremely important from a safety and security aspect. Using White-Light LED illuminators that are activated by advanced PIR sensors allows pathways to be lit up when a person has triggered the sensor. This is also a very good energy saving solution as the lights aren't required to be constantly on.

Intruders are most likely to commit criminal activities such as vandalism, use of illegal substances or violent behaviour in dark areas where it is more difficult to be detected or noticed. Using White-Light or Infra-Red LED illuminators will light up the view for the camera at dark hours either in full colour or black and white. White-Light also acts as a great security deterrent with features such as strobing to scare off the intruders.

Vehicle Monitoring

Using Automatic Number plate recognition (ANPR) technology for campus parking is a great security solution to deter unwanted visitors from entering. With the ability to create an approve/deny list of all student and teacher license plate numbers the security manager can precisely monitor who is entering the campus parking. Once a student or teacher on the approved list approaches the gate, the ANPR camera recognises the license plate and the gate opens. If a visitor or any other person approaches the gate and the camera doesn't recognise the license plate then the campus security guard located at the gate will be alerted and take relevant actions.

Live Event Tracking

It is important to be able to act quickly when a potential intruder is on campus. Using e-mapping technology allows you to precisely follow the intruder's movements on campus in real time. When a camera is alerted of a potential intruder the e-mapping software will flash that exact camera on a virtual map of the campus. This can be done using PTZ auto tracking or other cameras activated by advanced PIR sensors. The security personnel monitoring the e-mapping software can then click on the flashing camera and see a live view of what has alerted the camera, if it is confirmed as an intruder then relevant actions may be taken.

Conclusion

Every year the vast majority of educational establishments experience some sort of security issue. With the range of violence and threats increasing, there is a critical need for every establishment to install self-sufficient security technology, which will enable security personnel to prevent and quickly respond to incidents on site.

With an integrated security system consisting of physical and electronic security, schools and universities will be able to meet the evolving requirements in order to detect and help prevent criminal activities from occurring.

Smart electronic devices are used to create a strong perimeter boundary. IP products can be easily interfaced with existing building management systems, or installed as standalone intelligent IP devices, allowing the user to create smart customised actions to suit specific requirements.

IP devices can easily be added onto the network, which enables institutions to future proof the site for further security integration. It is also easy and convenient for the Integrator to adjust and configure the settings over the network, resulting in fewer site visits, saving time and money.

To prevent crime from happening in schools and universities it is imperative that the security devices integrate and communicate with each other. Intruder detection, LED illumination and video surveillance monitoring can be integrated to provide an 'all-in-one' cost effective solution.

GJD have embraced the Internet of Things (IoT) and have developed unified security surveillance solutions that are reliable, accurate and versatile. For example, a motion sensor can be used for lighting control, intrusion detection and video surveillance monitoring. Security guards can receive instant notifications on their mobile phone, then view the video surveillance on-site, or remotely via a monitoring centre at any time, including out of hours when crime is most likely to happen.

A high quality security system adds an extra layer of defence to potentially reduce the risk of criminal activity, which provides schools and colleges with a safer environment.

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