Chapter 38 - IFPO - CPO

Alarm System Fundamentals

Purpose

In many cases, alarm systems form the backbone of a facility's physical protection program.

Alarms are very likely to be encountered by the protection officer or security specialist as they perform their daily duties.

Regardless of your industry, employer, shift schedule, or geographic location, it is likely that you will have some involvement with alarm systems.

Alarm System

▶ An alarm system is used to provide early warning of an intruder.

▶ There are three components to an effective alarm system:

1. Sensor

2. Signal

3. Response

Alarm System

▶ An alarm system should be designed to provide layers of detection around an asset.

▶ Each layer is made up of a series of detection zones designed to isolate the protected property and to control the entry and exit of authorized personnel and materials.

▶ In more sophisticated systems, sensors are interfaced with electronic entry-control devices, network video, alarm reporting displays (both visual and audible), critical communications, and security lighting.

Alarm Monitoring

There are four methods of monitoring

1. Local
2. Central
3. Direct Fire or police
4. Proprietary

Local Monitoring: *This is the simplest form of alarm monitoring*.

▶ Consists of a bell or horn located near the protected door or window.

▶ In the event of an attempted penetration, the resulting sound is intended to alert nearby police, security personnel, neighbors, or company employees.

▶ A major drawback of this approach is the fact that many people will not bother to investigate a blaring alarm.

Central Station Monitoring:

▶ This is the best and most popular method of alarm monitoring.

▶ It consists of a company that is paid to provide monitoring services for a variety of clients.

▶ When an alarm signal is received, an employee of the alarm company is responsible for notifying the police so they can respond.

▶ In most cases, a company's security officers are also notified so they can respond as well.

Alarm Monitoring

▶ **Direct Fire or Police Monitoring:**

  ▶ This is no longer a common method of alarm monitoring.

  ▶ In some rural or remote jurisdictions, the local police or fire station will monitor alarms from their headquarters.

▶ **Proprietary Monitoring:**

  ▶ In this approach, alarms are monitored by the company's security staff.

  ▶ In most cases, a security control center is on the premises and serves as a focal point for all security operations.

  ▶ A drawback is that proprietary monitoring can be very expensive. This is because the company must not only buy the required monitoring equipment but it must also pay people to operate it.

Operator Interface

▶ Interaction between the system an humans.

▶ He or she interacts with the alarm system through devices that can be seen, heard, or touched, as well as manipulated.

  ▶ **Visual displays:** The type of display used to visually inform the operator of the system's status. Information is usually displayed on computer workstations or large high-definition video screens.

  ▶ **Audible Alarm Devices:** The system must also generate an audible alarm. The audible alarm may be produced by the ringing of a bell or by the generation of a steady or pulsating tone from an electronic device.

  ▶ **Logging devices:**

    ▶ All alarm system activity should be logged and recorded.

    ▶ Logged information is important not only for security personnel investigating an event but also for maintenance of personnel checking equipment.

    ▶ This is especially important when trying to troubleshoot nuisance or "false" alarms.

Operator Interface

Integrated systems can produce data-driven reports which can perform analysis on the various types of alarms. These reports are user configured depending on the type of reports needed.

- ▶ **Alarm printers:** Alarm printers provide a hard copy record of all alarm events and system activity.

- ▶ **Report printers:** Modern systems include a separate printer for printed reports.

- ▶ **Operator control:** A means is required to transmit information from the operator to the system. The types of controls provided usually depend on the type of display the system uses.

Alarm Sensors

▶ A basic alarm system is divided into three layers:

1. Perimeter protection

2. Area protection

3. Spot protection.

▶ **Perimeter protection** is the first line of defense to detect a potential intruder. Alarm sensors on the perimeter are typically mounted on doors, windows, vents, and skylights.

▶ **Area protection** is also sometimes called volumetric protection.

▶ The sensors used for this purpose protect the interior spaces of a business or residence.

▶ These devices provide coverage whether or not the perimeter is penetrated and are especially useful in detecting the "stay behind" criminal.

▶ **Spot protection** is used to detect unauthorized activity at a specific location.

▶ It serves as the final protective layer of a typical alarm system.

▶ Assets most commonly secured with spot protection include safes, vaults, filing cabinets, art objects, jewelry, firearms, and other high-value property.

Duress Alarms

▶ Duress alarms (sometimes called "panic buttons") are frequently encountered in many business settings. They are often concealed under a desk or countertop.

   ▶ **Fixed duress devices** are mechanical switches permanently mounted in an inconspicuous location.

   ▶ **Portable duress devices** are wireless units consisting of a transmitter and a receiver. The transmitter is portable and small enough to be conveniently carried by a person.

Nuisance Alarms

▶ The vast majority of alarms are nuisance or "false" alarms.

▶ Most faulty alarms are generated by the following:

1. User error

2. Poor installation

3. Alarm monitoring

4. Substandard materials

5. Employee indifference

6. Inadequate training and system information

Alarm Response

▶ One of the major problems with nuisance alarms is that they invariably reinforce a mindset that every alarm is a nuisance alarm. For both public law enforcement and private security, this leads to complacent attitudes and poor officer safety procedures.

▶ The simple movement of balloons, plants, or a sign from the building's air conditioning or heating system can activate a motion detector. Then again, it could be something much more dangerous.

Alarm Response

- The following alarm response tactics are recommended:

  - Never assume an alarm event is "nothing." Assume you are responding to an intrusion until proven otherwise.

  - Maintain radio contact with fellow officers and your security control center.

  - Maintain sound discipline. Keep radio volume low. Secure noisy keys and other equipment.

  - If upon arrival to the scene, you detect broken glass or other indications of an intrusion, do NOT proceed into the building. Call the police and assume a position from where you can be a "good witness."

  - Evaluate all alarm information. Has there been just one alarm? Is there a series of alarms which might indicate someone is actually moving around the interior of the building? The professional evaluation of all alarms can assist you in determining where the intruder is. Relay this information to responding police units.

  - Know your company's policy for alarm response. Use common sense and avoid complacency that can lead to tragic consequences.

Alarm Response

- Know of or how to locate appropriate phone numbers and passwords for your monitoring station.

- Keep emergency call lists, updated with appropriate call-out lists, as well as local authorities.

- Any alarm system is only as good as the people who operate, monitor, and respond to it. Protection officers must be properly trained to respond to alarms. They must understand how their system works and the need to treat every alarm seriously.

Fire Alarm Systems

▶ Of all the alarm systems, it is most critical for security officers to understand the basic operation and interaction of fire alarm systems.

▶ It is critical to have a thorough working knowledge of the operation of the system and the security officer's role in its successful use.

▶ Like intrusion alarm systems, fire alarms can be connected with a number of devices on a zone. This type of system is known as a multiplex or addressable system.

Fire Alarm Sensors

- **Heat detectors:** Measure changes in a room's ambient temperature.

- **Photoelectric smoke detectors:** When smoke enters the detector, it refracts that infrared light and an alarm is triggered in response.

- **Ionization detectors:** Use radioactive material to detect smoke that enters the chamber.

- **Air sampling detectors:** continuously analyze air samples for smoke or combustion particles.

- **Beam detectors:** These utilize an electric eye to detect smoke.

- **Flame detectors:** Able to spot actual flames.

- **Pull stations:** Used by people who spot a fire.

Building Automation Sensors

▶ Building automation sensors are used to measure and adjust the heating, ventilation, air conditioning, lighting, and other environmental conditions in a protected facility. They include:

  ▶ **Gas detectors:** If the gas levels exceed a preset tolerance, an alarm is generated.

  ▶ **Level Indicators:** Applied to tanks that hold liquids or gases that are critical to a facility's operation.

  ▶ **Temperature Sensors:** If the temperature falls out of the preset range, an alarm is triggered.

▶ **Power failure sensors:** Integrated with the electrical system of a facility. When a power failure occurs, a notification alarm is sent to the central monitoring station. Devices such as backup generators and emergency lights can be automatically activated.

▶ **Integrated sensors:** Example: Can be integrated with lighting systems. In this way, lights can be programmed to turn on automatically when a staff member enters a darkened room.

Network Video System

- ▶ Network video systems allow dispatchers to watch over a large number of areas at once.

- ▶ From the central monitoring station, a dispatcher may be able to view up to 16 separate images in real time on a single monitor.

- ▶ Color images are better for identification purposes, while black-and-white images have better performance in low light.

- ▶ Network video cameras generally incorporate a method of recording the images they monitor.