

## Alarm Systems

An alarm monitoring system comprises a network of devices designed to alert occupants and others of unusual events. These systems are installed within buildings and can detect occurrences such as fires or unauthorized entries.

Additionally, some alarm systems are equipped to monitor environmental changes, often utilized in larger buildings. Alarm systems are prevalent in commercial properties and increasingly in private residences. As a security professional, it is crucial to understand the different types of alarm systems you may encounter. Being able to interpret and react to the signals from these systems will enhance your effectiveness in your role.

### Types of Alarms

Alarm systems can be used to detect or monitor various conditions, including:

- **Fire (smoke)**
- **Intruders**
- **Temperature**
- **Humidity**
- **Toxic substances (e.g., carbon monoxide)**
- **Water pressure, water leaks**
- **Pressure**
- **Equipment operation**

Some alarm systems are designed to predict emergencies, such as an intruder or fire, while others are tasked with overseeing building operations, like temperature or humidity levels. Buildings with advanced operational systems typically have dedicated personnel to monitor these systems and alarms. During off-hours, such as evenings or weekends, there might be an individual on call for emergencies or issues related to the building's mechanical systems.

Sophisticated alarm systems often have the capability to alert the building operator via phone or email. However, older systems may lack these features, requiring you to be vigilant in monitoring the systems assigned to you. Regular checks for alarms and promptly contacting the appropriate personnel at the first sign of a problem are essential responsibilities.

### How Alarms Work

An alarm system consists of three main components:

1. **Sensor:** Detects changes in the environment, such as movement, light, temperature, smoke, or pressure.

2. **Transmitter:** Sends the detected information from the sensor to the control panel through various methods, including hard wires, telephone lines, radio signals, or wireless technology.
3. **Control Panel:** Receives the data from the transmitter and triggers an appropriate response sequence.

## Types of Sensors

Various types of sensors are used to monitor different events. The type of sensor depends on the specific information it needs to detect. For instance, an intruder alarm might detect movement or changes in light, while a fire alarm might detect smoke or increased heat.

Here is a list of sensors you should be familiar with as a security guard:

- **Photo Sensors:** These sensors respond to visible or invisible light. A common use is in entry doors of stores or businesses, where a light beam across the threshold triggers the alarm if interrupted.
- **Ultrasonic Sensors:** These sensors operate like radar, emitting pulses that travel toward a target and return. The sensor measures the return time of the pulse. If the return time shortens, indicating movement toward the sensor, the alarm is triggered.
- **Magnetic Sensors:** Magnets are placed on two surfaces to create a magnetic field, such as on a window and its frame. When the window is opened, breaking the magnetic field, the alarm is activated.
- **Shock Sensors:** This older technology uses a wire around a building opening, like a window. The wire forms an electrical circuit monitored by the alarm system. Opening the window breaks the circuit, triggering the alarm.
- **Fire Alarms:** Fire alarms use various technologies to detect smoke and flames. Some use photo sensors, where smoke breaks a light beam, triggering the alarm. Others use temperature sensors to detect sudden increases in heat, or ionization technology to monitor air quality changes.
- **Gauges:** Common in building mechanical systems, gauges indicate levels, like fuel or speedometers in cars. They often show normal or unsafe zones. While older systems required visual inspections, newer ones can self-monitor.
- **Mechanical Sensors:** Found in schools and public buildings, these devices act as sensors when manually triggered. For example, pulling down a fire alarm handle sets off the alarm bells.

## Transmitters

An alarm transmitter's primary function is to relay information from a sensor to the control panel. Different systems use various methods for this communication:

- **Telephone Wires:** Some home security systems use telephone lines. When triggered, the transmitter initiates a call to the alarm monitoring company, the police, or both.
- **Hard Wired:** Systems like fire or smoke detectors often have a direct physical connection between the sensor and the transmitter, ensuring reliable transmission of information.
- **Wireless:** Similar to Wi-Fi, wireless alarm systems use transmitters to send information to the control panel without physical connections. The transmitter functions much like a router sending an internet signal to a computer, providing a flexible and efficient means of communication.

## Control Panels

In an alarm system, a control panel is not always a separate physical object displaying alarm information. Consider a typical home smoke detector: when it senses smoke, it emits a loud noise to grab your attention. In this case, the sensor, transmitter, and control panel are integrated into one unit. Here, the control panel's role is to produce a loud, attention-getting sound.

However, in many alarm systems, especially in commercial buildings, an actual control panel is used. These are often large, wall-mounted panels resembling schematic drawings with small lights at various points. These lights may blink, remain dim, or change color—green typically indicates normal conditions, while red signals an alarm.

Control panels come in many forms, and their configurations, including lights, drawings, indicators, and sounds, can vary significantly between manufacturers.

## Alarm Response

When alarms are installed at your work site, it's crucial to familiarize yourself with which alarms you are responsible for and the required response for each. You need to know the location of alarms, what each monitors, and where the control panels are. If you're in charge of monitoring building systems, confirm the acceptable thresholds and record them for reference.

Each site may have different alarm response protocols, so don't assume they are the same, even within the same organization. Different buildings and locations may require different responses. Always check your post orders and clarify expectations with your supervisor.

The type of alarm you monitor will determine the expected response:

- **Fire Alarms:** Typically, you should ensure emergency services are called immediately. In some cases, you may need to contact the owner or a designated contact. Follow your instructions carefully, even if the order of actions seems counterintuitive.

- **Building Systems Alarms:** For alarms monitoring system functions, you might need to take specific actions, such as shutting down a process. Ensure you know the procedures beforehand. Don't wait until an alarm triggers to learn these steps.

Understanding alarm operations is essential for any systems you monitor or respond to. Occasionally, you might need to shut down an alarm or part of a system for maintenance or construction. Only do this with clear instructions from your post orders, supervisor, or an emergency services representative. Always document any shutdown or alarm testing in your notebook, including the name and contact information of the person giving the instructions.

**When an alarm is triggered:**

- **Respond to all alarms:** Always treat alarms as genuine until proven otherwise. Check all indicators thoroughly.
- **Contact your supervisor:** Inform them that you are leaving your post and provide details about the alarm.
- **Determine the source and appropriate response:**
  - **False Alarm:** Follow the protocol in your post orders and report back to your supervisor.
  - **Emergency:** Follow the emergency protocols provided.
  - **Manage the scene:** Respond appropriately based on the situation:
    - **Fires and Emergencies:** Facilitate orderly evacuations.
    - **Robbery or Child Abduction:** Secure exit doors.
    - **Building Systems Failure:** Stay calm and advise people to remain patient.

Being well-prepared and knowledgeable about alarm systems and responses will help you manage incidents effectively and maintain safety and security at your work site.