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# Ask the Inspector

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## I have heard a lot of information in the media lately regarding home security systems. What types of systems are available and how effective are they?


A security system is installed for occupant health or safety reasons, or to protect the building itself from intruders/invasion. Most home security systems on the market today consist of similar equipment; sensors, a central control box that monitors the sensors, remote key pads, and an audible alarm that is triggered when a sensor is activated. The main difference between the systems is in the type of sensors used and the way in which the system is monitored, if at all.

### Types of alarms

**Carbon monoxide and/or smoke detectors** – can be incorporated into most security systems to alert occupants that there is a problem with the indoor air quality.

**Temperature sensors** – senses low temperatures (which may cause pipe freeze and water damage) and/or high temperatures (indicating a fire).

**Water sensors** – detects leaks from appliances, sump pits, or basement wall/foundation leaks.

**Panic or emergency handheld alarm switches** – can also be integrated into a home security system for those who require frequent medical attention, or for those who want the option of manually sounding the alarm.

**Vibration sensors** – used in earthquake-prone areas to provide early warning of an earthquake's sound waves before the earthquake causes its damage.

**Pool alarms and sensors** – used to monitor a swimming pool and activate if someone falls in.

**Motion sensors** – the most common alarm that triggers light fixtures inside or outside or triggers alarms. Can differentiate between a 15 kg dog and a 75 kg burglar.

**Window/door opening detectors** – are the most popular. It warns occupants that someone has entered the home.

**Pressure mats** – installed inside of the entry doors to indicate someone has entered the home.

**Glass break/noise sensors** – indicates that a window has been broken by an intruder trying to access the home.

**Video Surveillance** – records activities in certain areas of the home and monitor these areas via video monitors in the home, over the internet or from anywhere in the world. Some systems can be controlled via the Internet. If an intrusion occurs, it can send messages to a cell phone or through email.

Sensors should be installed where they will be the most useful. For example, it does not make sense to install a window opening sensor on the second floor of a home – unless there is a way to easily access that window such as a porch roof or balcony.

Most security systems are equipped with an alarm that is triggered when a sensor is set off. There are two ways in which this alarm may be used; as a deterrent to burglars, or as an apprehension device. A silent alarm that does not alert the intruder, but alerts the authorities to the intruder would be more effective at apprehending the suspect than an audible alarm

that alerts the suspect and scares them away. However, if the intruder is scared away quickly, they will have less of an opportunity to take personal belongings. Silent alarms should have supervised sensors that report when an intruder has entered, low battery and tampering. If the alarm is disconnected or destroyed when armed, they will send an alarm signal to the control panel.

Having the system monitored is an option with most security systems. If the system is not monitored, you'd have to rely on your neighbours to call the authorities when the alarm is triggered and the home is empty, although this is not an ideal situation in rural settings where there are no close neighbours. If monitored, it is usually handled by the company who installed the system. When one of the sensors triggers the alarm, a message is sent to the control center, either via telephone or long-range radio. The company may then phone the house or send a security service directly to the property to verify that it is not a false alarm and subsequently call the appropriate authority. The disadvantage of using a telephone line is that it can easily be cut, disconnecting communication with the monitoring company. Telephone wires on the exterior of the home should be protected in a metal sheathed cable to prevent damage.

Security systems may also be connected directly to the local police/fire departments, who respond to an alarm. However, due to the high rate of false alarms, home security systems are often at the bottom of their priority lists and response time is often very long. In some areas, a false alarm will result in a fee charged to the homeowner to cover the department's time and travel costs. Due to the frequent occurrence of false alarms, many municipal police/fire departments have made it a policy not to monitor security systems.

Some other things to consider when talking about alarm systems include cost, convenience, and necessity. In some instances the equipment and installation of a system is free, if the customer signs onto a monitoring plan for a specified amount of time. Installation usually includes a certain number of "free" sensors with additional ones installed at a cost.

Some systems treat the people in the home like prisoners – certain rooms cannot be entered due to the presence of motion sensors, which is inconvenient at night, for example, when the system is armed but the occupants are at home. Windows or doors that are equipped with sensors cannot be left open when the system is armed, which means some potentially very warm temperatures inside during the summer months.

Before you install a system, it would be a good idea to ask yourself a few basic questions. Is an alarm system necessary? Is there a high crime rate in my neighbourhood? Do I travel often, leaving the home unoccupied for long periods of time? Do I own expensive or priceless objects that I need to have protected? While these are not the only reasons why people have security systems installed, they may just want peace of mind that their home is being monitored at all times.

If you decide not to have an alarm system installed, there are some easy ways of deterring would-be thieves:

- Illuminate the exterior of the home – if a thief thinks he or she may easily be seen, they will likely find an easier target.
- Keep doors and windows that are easily accessed locked/secured at all times.
- Do not hide keys in "secret" locations on the exterior of the home.
- Do not let newspapers and mail pile up on your front porch.
- Place security bars on basement windows that could easily be kicked in.

## How do the sensors work?

### Window/Door Open

A cable runs through each of the sensors to form a circuit. A magnet is placed on the door or window that, when closed, completes the circuit. When the door or window is opened, the magnet opens, the circuit is opened (which the control panel senses) and the alarm is sounded. In a wireless system, the magnet would be replaced by a contact that, when opened, would send a radio frequency signal to the panel. If having a window open is important, there are screens that have wires in them that will alert the system when the wire is cut. These are usually very expensive.

### Motion Detectors

Infrared light is one type of sensor that keeps track of the ambient room temperature. If a body enters the room, the room temperature changes and the sensor detects the change. Some sensors, use Passive Infrared (PIR) sensors as well as Doppler technology, which detects a moving mass. There are motion detectors available that differentiate between a person and a pet, based on a set weight amount. With all sensors, as soon as a change is noticed, a message is sent to the control panel.