by Charles Wardell

SHOPPING FOR

HOME SECURITY SYSTEMS

C. BATES

A home-security contractor installs an AT&T wireless infrared detector.

Alarm systems not only protect against intruders, but can also give early warning in case of fire or medical emergency

In the last decade, fear of crime has fueled a brisk demand for home security systems. The National Burglar and Fire Alarm Association (NBFAA, 7101 Wisconsin Ave., Bethesda, MD 29814; 301/907-3202), which represents security systems dealers and installers, estimates that 1 in 6 American homes is electronically protected — a nearly 40% increase over the last five years — and expects that number to increase to 1 in 5 by 1997. Meanwhile, the cost of an installed system has dropped by nearly a third.

For builders who have no experience with home security systems, the variety of available detection equipment and features may be overwhelming. To complicate matters, most installers are also dealers for one or two manufacturers' products, so it's hard to get an objective opinion on any particular system. This article will give you the information you need to become a more critical shopper.

A Basic System

A basic home security system includes sensors, alarms, and controls. The user arms and disarms the system at a keypad installed near the entry door. When the system is armed and an intruder trips a sensor, a signal is sent to a control panel, which triggers an alarm. How well this works depends on the types of sensors used and where they're placed.

Exterior sensors. Many systems are designed around concentric "circles of protec-

Choosing a Security Sub

Few builders are equipped to install a home security system. If you're in the market for a subcontractor to perform the installation, here's what to look for.

- Ask insurance companies and the local police or fire department for a list of qualified installers. NBFAA will also supply a list of its member companies.
- Find out if you're working in one of the 38 states that has a licensing law for home security installers. Requirements vary: Oregon installers, for example, must have a license for low-voltage wiring; New York companies must be NBFAA trained and certified, carry a photo ID, and undergo fingerprinting and a criminal background check.
- Even in states with no licensing requirement, use a sub whose employees have been properly trained and who have undergone a background check.
- Check for insurance. In addition to general liability and workers comp, security subs should carry an "errors and omissions" policy. This is a type of malpractice insurance for security companies that covers the cost of legal claims arising from a failed security system. (The property in the house should be covered under the homeowner's insurance policy.)
- Ask about around-the-clock professional monitoring of the security system. If you work in an area susceptible to floods, fires, or earthquakes, look for a monitoring service that can provide continuous coverage during a natural disaster. Honeywell, for example, has recently opened a nationwide monitoring office in Minneapolis to assist in the event of an earthquake or other disaster that overloads the local monitoring station.

— C.W.

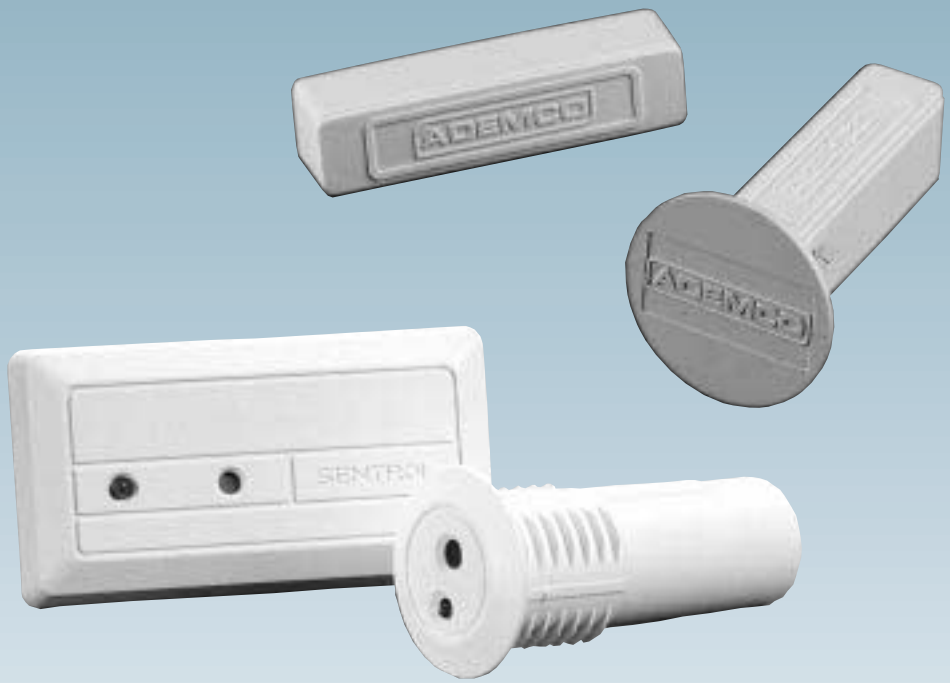

Figure 1. *Magnetic contacts like Ademco's 7940 (top) sound an alarm when a door or window is opened. Glassbreak detectors, such as the Sentrol ShatterPro II shock detector (bottom), sense the sound and vibrations of breaking glass.*

tion." The first circle or zone is the exterior — the property surrounding the house. Exterior sensors include *pressure sensors* that can detect a car in the driveway, and *motion detectors* and *photoelectric beams* that sense when someone is running across the yard. Exterior sensors add significantly to the cost of a system, and are most common in high-end homes.

Perimeter protection. The second zone, the house perimeter, uses several types of sensors (Figure 1). *Alarm screens* look like ordinary window screens, but they are interwoven with wires that form an electronic circuit. The alarm is tripped when the screen is removed or cut. *Magnetic contacts* use a universal magnetic reed conduct switch (an electrical switch that opens or closes depending on how close it is to a magnetic field) that's attached to a door or window frame, lining up with a magnet on the window or door. Opening the door or window pulls the magnet away from the switch and sets off an alarm. *Glassbreak sensors* sound an alarm when the glass in a door, window, or skylight is broken. Acoustic glassbreak sensors "listen" for the sound of glass breaking, while shock sensors detect the vibrations generated by breaking glass. Combination sensors do both.

Interior sensors. The final security zone is the home's interior (Figure 2). *Passive infrared*, or PIR, sensors detect intruders by sensing their body heat. *Motion sensors* use sound waves in the ultrasonic or microwave range to detect movement (the best motion sensors combine microwave and PIR technology). *Photoelectric detectors* send an invisible beam of light from a transmitter to a receiver that trips an alarm when the beam is broken by an intruder. *Stress sensors* are attached to support beams under large expanses of floor and will sense flexing of the structural members.

If an elderly or handicapped person will be living in the house, the security system should include a panic button. This usually consists of a pendant worn around the neck. It has a button that can be pushed to summon help in the event of a medical or other emergency.

Reducing False Alarms

A major issue the security business faces today is the growing number

Figure 2. *C&K's DualTec motion detector (left) uses a combination of microwave and infrared technology. It can be adjusted to ignore pets and other small animals. The same technology in Ademco's ip 1480 (right) ignores ceiling fans, vehicle traffic, and other environmental conditions that might otherwise trigger a false alarm.*

of false alarms. According to John Galante, executive director of the Security Industries Association (1801 K St. N.W., Suite 1203L, Washington, DC 20006; 202/466-7420), 95% of all alarms are false. This has prompted some police departments to levy fines to the owners of systems that give off false alarms.

Technical improvements that make sensors more reliable have eased the problem to some extent. For example, many motion detectors, such as Ademco's "quad element," let you adjust their sensitivity so that the cat won't set off the alarm, but a person will. (For more information on the products mentioned in this article, see the manufacturer list at the end of the article.)

Simpler codes. But this kind of technical improvement doesn't affect the 65% to 75% of false alarms that are triggered by users. As a result, manufacturers have concentrated most of their false-alarm reduction efforts on making systems more user-friendly. Much of this effort is focused on the controls.

Most security systems are armed and disarmed by entering a code or series of codes into a keypad mounted inside the entry door. Codes should be easy for the homeowner to change, and the system should let the homeowner choose a temporary access code that lets workers come and go during the day without compromising the main code.

Long, encrypted code sequences also increase the chances that the homeowner will mistakenly set off an alarm. A good example is a system that supports several different security levels — arming the perimeter, for example, while leaving the internal sensors off. If the coding sequence is complicated — requiring, say, two or three menus to reach the main menu — the chance for a mistake is higher.

Better keypads. Keypad design is also important. To prevent mistakes, some standard keypads are backlit, and have keys that beep when depressed. Other models go even further. Honeywell's "special needs" keypad includes large graphics, raised lettering, high color-contrast keys, a backlit panel, and buttons that click when fully engaged (Figure 3). Other systems use a digitized voice to confirm that the correct keys have been used. When you arm Sprint's Fonsafe system, for example, a voice says "Home" or "Away," depending on the

Beyond Burglars: Fire and Toxic Gas Protection

Full-featured home security systems can do more than protect against intruders. Along with home automation features that can control lights and appliances — even the heating and cooling systems — many security systems can also monitor smoke, fire, carbon monoxide, and natural gas detectors.

Smoke and fire alarms. In addition to sounding a local alarm, a supervised smoke detector sends a signal to the control panel, which relays the alarm to the monitoring service. After calling the house to rule out a false alarm, the service notifies the fire department.

Some systems also monitor another form of fire protection: temperature sensors. *Fixed temperature sensors*, which are used in attics, basements, and garages, sound an alarm when temperatures reach a pre-set limit. *Rate-of-rise heat detectors* sense a rapid rise in temperature, and are most useful in kitchens, where smoke detectors are especially prone to false alarms. In northern climates, *cold temperature detectors* set off an alarm at the monitoring service when the house temperature goes below 40°F. The service then sends someone to check the house before water lines freeze and burst.

Carbon monoxide and natural gas detectors. Some security systems can also guard against the buildup of potentially deadly gases, such as carbon monoxide and natural gas. As with smoke and fire detectors, the advantage of using supervised CO and gas detectors is that an alarm sounds both in the house and at the monitoring service.

— *C.W.*

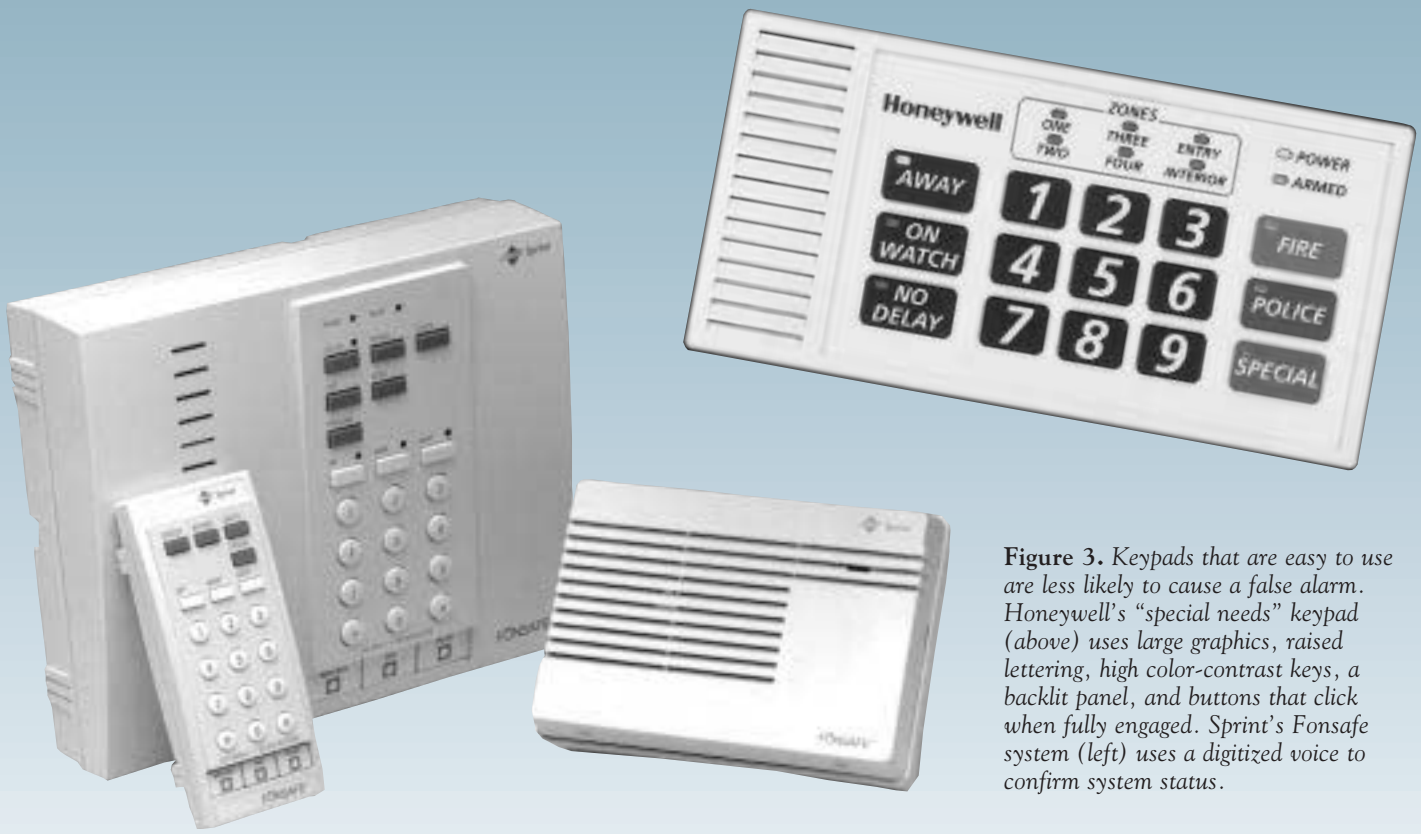

Figure 3. *Keypads that are easy to use are less likely to cause a false alarm. Honeywell's "special needs" keypad (above) uses large graphics, raised lettering, high color-contrast keys, a backlit panel, and buttons that click when fully engaged. Sprint's Fonsafe system (left) uses a digitized voice to confirm system status.*

security level you choose. When you disarm it, the voice says "Off." Some systems also have a duress or ambush code for use when an intruder forces the homeowner to disarm the security system. Punching in the duress code turns off the house alarm but also alerts the monitoring station.

Intercom. An interrogator module can reduce false alarms by using an intercom between the home and the monitoring system. In the event of an alarm, the monitoring station can call the house for confirmation. If it's a false alarm, the homeowner gives the monitoring company a verbal code word.

Remote control. Another feature that can prevent false alarms is a handheld remote control. Instead of having to enter the house to disarm the system, remote controls let the user arm and disarm the system before getting out of the car (Figure 4). Ademco's two-way wireless keypad also tells the user if a burglary has occurred since the system was last armed.

Communication options. A critical part of any monitored system is the link between the home and the monitoring office. While some systems use a dedicated monitoring line leased from the phone company, these are expensive and are not available in many places.

Most residential systems send the alarm signal over the standard phone line. In this case, however, it's important to install a phone-line monitor. If someone cuts the phone line, this device sounds a local alarm, and activates a cellular or long-range radio backup to alert the monitoring company (Figure 5). While this arrangement is cheaper than a dedicated phone-line monitor, it will add to the monthly cost of the system.

Battery backup. The dealer should also provide an auxiliary power source, such as a battery pack, to prevent the system from being disconnected by a burglar. Though some dealers include the battery pack in their basic system, it's usually an add-on. Some communities require security systems that include smoke detectors to have a 24-hour battery backup (see "Beyond Burglars: Fire and Toxic Gas Protection," previous page).

Planning the System

You can best protect both your clients and your reputation by subcontracting the installation to a professional security installer. A responsible home security dealer will carefully tailor the system to the homeowner's lifestyle. This means your clients should be on site during the initial meeting with the security installer. Key issues you should cover include:

- Are there children or pets in the house that could possibly set off false alarms?
- Is special protection needed for particularly valuable possessions or collections?
- Do the homeowners travel frequently and leave the house unattended for extended periods?
- Do other people use the house, and will it be rented out?

You can help during this interview by presenting the security dealer with a list of all possible points of entry, and by pointing out any interior areas that need special protection. This is also a good time to discuss other types of sensors, such as smoke and fire detectors, that can be included in the security system.

Make sure the installer discusses the placement of each sensor with your clients. Most sensors are relatively

Figure 4. *Remote controls, such as Ademco's 5827BD two-way wireless keypad, let the user arm or disarm the system from the car or the yard before entering the house.*

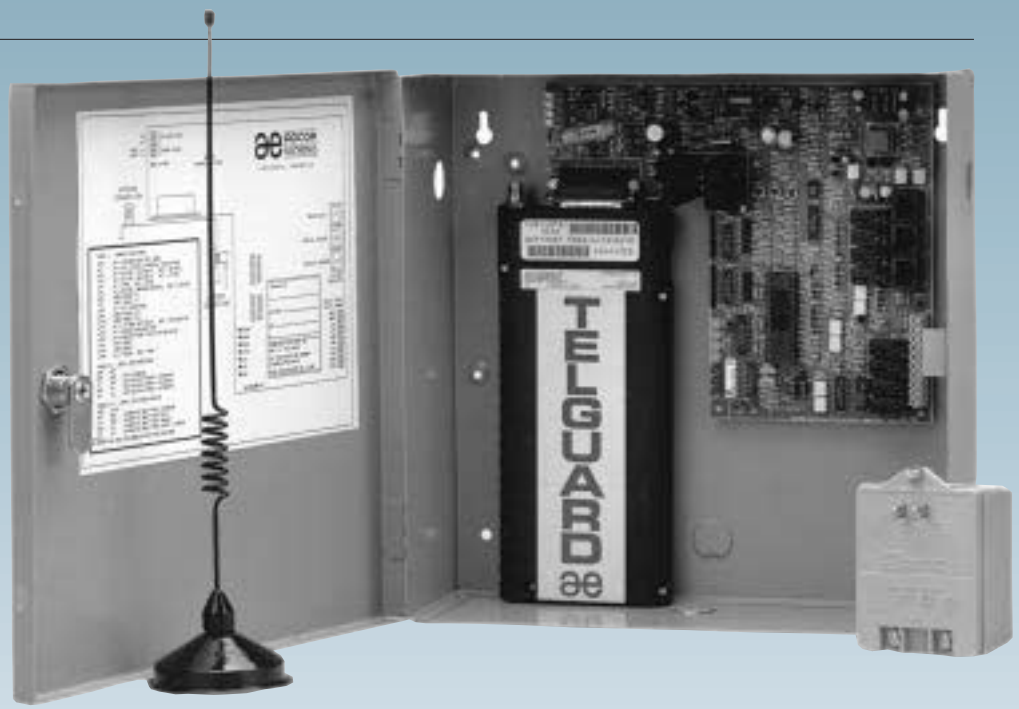

Figure 5. *Adcor Electronics' Telguard Cellular Backup can be installed on a standard security system. It's designed to alert the monitoring station if someone cuts the phone line.*

unobtrusive, but there can be problems. You don't want a motion detector installed in a corner where your client intends to place a floor-to-ceiling china cabinet, for instance.

Most security professionals recommend a system that covers the perimeter and includes a few interior sensors. The price for such a system ranges from $1,000 to $1,500. Many dealers caution against cheap, one-size-fits-all systems. Some large national security companies advertise systems for as low as $199, but most pros say that these companies typically offer one door contact, one motion detector, and a keypad. Their main purpose is to sell a long-term monitoring contract (typically three years).

Many residential security systems now offer wireless sensors — digital radio transmitters that send out a high frequency signal to a receiver in the control panel. Wireless sensors can be installed in an existing home in a few hours, compared with the two or three days required for a hard-wired system.

However, some industry representatives think that wireless sensors are more prone to false alarms. And compared with hard-wired sensors, wireless sensors are 30% to 50% more expensive, because each sensor contains a microprocessor chip, a battery, and a transmitter. Even if you don't install a security system during construction, prewiring is a good idea. Prewiring takes just a few hours, and it's an inexpensive way to give the homeowner the option of installing a security system later for less expense than if the wires had to be retrofitted. ■

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