Mississippi Security Association

MSA System Salesperson

Student Manual

Introduction

WELCOME

to the Mississippi Security Association's
System Salesperson Course

MISSISSIPPI SECURITY ASSOCIATION Est. 1982

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Goals of this Course

- Compliance with the law
  - Successful completion of this course will meet the state requirements
- Expand your knowledge
  - We will cover a broad scope of the alarm industry offering insight into how to design, install and service alarm systems.
- Bring new industry members up to speed
  - Our goal will be to bring those new to the industry up to at least a minimal level of industry knowledge.
  - We also hope to fill in areas of knowledge for experienced professionals.
- Brush you up on codes & standards
  - Industry codes and standards are revised every 3 years to reflect new best practices and the latest technology.

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Table of Contents

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Why you are here

- Improve your knowledge
- Enhance your value to your company
- Comply with state requirements

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MISSISSIPPI SECURITY ASSOCIATION Est. 1982

What MSA does for you

- Provides networking opportunities
- Gives you information
- We monitor and influence the state and local legislative process
- We provide training at a discounted rate for members
- Belonging gives your company credibility & exposure

5

We need your involvement!

- You only get back – what you put in
- This association is your voice to government
- Speak up!

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Disclaimers

- All of the material in this course is copyrighted (2019) by MSA
- Material may not be recorded, copied or used in any manner without the expressed written permission of the Mississippi Security Association.
- Specific manufacturers and products mentioned in this course are intended as examples only and are not to be construed as endorsements
- All codes declare that all manufacturers instructions must also be followed to be in compliance

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Ethics & False Alarm Reduction

1

Ethics

- That branch of philosophy dealing with values relating to human conduct, with respect to the rightness and wrongness of certain actions and to the goodness and badness of the motives and ends of such actions.

2

Professionalism

- The standing, practice, or methods of a professional, as distinguished from an amateur.

3

Company Standards

- **Common sources**
  - Employee handbook
  - Company policy
  - On the job training
- **Common Reasons to Set Standards**
  - Meet customer expectations
  - Makes troubleshooting easier
  - It is more efficient

4

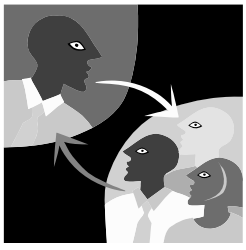
Company Obligations to Customer

Meet	Meet customer need
Comply	Comply with law
Install	Install full system as sold
Test	Test to verify operation
Ensure	Ensure user understanding
Offer	Offer ongoing service and repair

5

Employee Obligations To Employer

- Do your best!
- Promote customer satisfaction
- Promote company growth
- Work as a PROFESSIONAL !!



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Employee Obligations to Customer

- You only get one chance to make a first impression for YOU and YOUR COMPANY
- Look the part - dress to the level of professional that you want to be seen as
- Be Prepared - have everything you need ready to go

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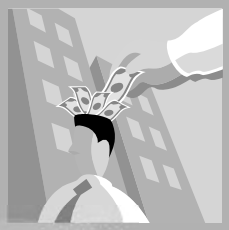
Courtesy



- Good customer service attracts & retains customers
- Treat the customer with respect - they are signing your check for that day!

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Sales Ethics

- Educate yourself about what you are selling
- Inform your customer of ALL contract details
- Respect the competition - sell your strengths not others weaknesses

9

Sales Ethics

- Listen to your customer's needs & desires
- Design to meet the customer's need
- Remember - One Size Does **Not** Fit All

10

Sales Ethics

- Do not mislead a customer
- Do not use tricks to get in front of the customer
- Do not imply you are with the user's alarm company and need to test or upgrade the system

11

Unscrupulous Tactics

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General Obligations

Work	Work WITH your local Police and Fire departments
Promote	Promote the industry's integrity through your local and state associations
Work	Work within your local community and local association to promote ethics and integrity in our industry

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Customer Communications

- Explain what you will be installing
- Verify job specifications with customer

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False Alarm Reduction

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Impact of False Alarms

- Can lead to fines and suspension of public safety response
- Can endanger responders
- Reduces effectiveness of system
- Adds to cost of system

16

Know Your Dispatch Rate

- Measure your problem

STEP	EXAMPLE
1. Find Number of Alarm Dispatch Requests	1000
2. Subtract Cancellations	100
3. Equals Actual Dispatch Requests	900
4. Find total number of alarm sites	1500
5. Actual Dispatch requests divided by Number of Alarm sites	900/1500
6. Equals Dispatch Rate	.6

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False Alarm Prevention

- Proper Design
- Quality Equipment
- Proper Installation
- Proper User Education
- Verify Before Dispatch
- Follow-up on Each False Alarm

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Burglar Alarm Systems

1

Burglar Alarm Systems

Overview

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Burglar Alarm Systems

- Burglar Alarm Systems are also known as security systems and intrusion detection systems
- Regardless of the name, the system consists of sensors, at least one warning device, and a control unit
- Communications capabilities may be included to alert someone off site when the alarm is activated

3

Burglar Alarm Objectives

Detect	Detect an intrusion
Activate	Activate a warning device upon detection of an intrusion.
Deter	Deter crime
Protect	Protect life and property
Bring	Bring an appropriate response to an emergency
Enhance	Enhance apprehension of criminals

4

Burglar Alarm Components

Burglar Alarm System Components

5

Burglar Alarm Components

- **Sensors** including motion sensors, door and window contacts and glass break sensors allow the system to monitor what is happening at the alarm site

Sensors

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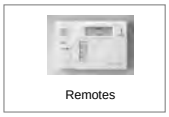
Burglar Alarm Components



Remotes

Control Unit & Power Supplies

Remotes allow the user to arm turn on and disarm turn off the system and display what is going on

Control Panels coordinate what happens in the system and provide power to the system devices

7

Burglar Alarm Components

- **Noti ication e ices** warn user and occupants when the alarm is activated
- **Si nalin de ices** communicate what is happening at the alarm site to a remote location

Notification Devices

Signaling

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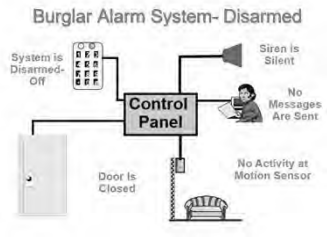
Burglar Alarm System- Demo



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System Integration

- An alarm system may interact with
  - **Cameras** - Example- cameras zoom in on a door when alarm is activated
  - **Access Control** Example- Authorized user uses credential to unlock a door and the alarm is bypassed
  - **ome Automation** Example- User hits away on touchpad which lowers heat, turns off lights and arms the alarm
  - **Ener Mana ement** Example- Alarm is armed and heat or air conditioning is lowered

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System Integration

ere are some ad anta es ith inte ration

- Can reduce costs
- Coordinate activity between systems example disarming alarm turns lights on

ere are some challen es ith inte ration

- One system can adversely impact another
- One component or system may not be designed to work with another

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Burglar Alarm Systems

Sensors

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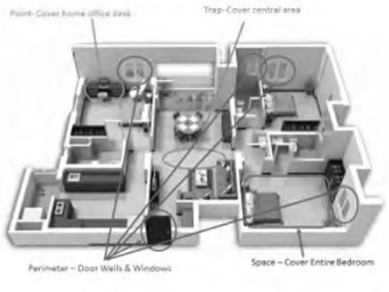
Sensor Use Examples



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Sensor Use Examples

- **Point**
  - Used to sense around specific objects
- **Trap**
  - Located in expected traffic area
- **Space**
  - Sense entire an area or room
- **Perimeter**
  - Sense penetration of outer barrier of an area

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Burglar Alarm Sensors

Sensors allow the system to monitor what is happening at the alarm site

Examples include

- Motion sensors
- Door and window contacts
- Glass break sensors

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Burglar Alarm Systems

Switches & Contacts

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How a Magnetic Contact Switch Works

A two-unit device, consisting of a small permanent magnet with no electrical connections and a magnetically sensitive reed switch, which is physically wired into the circuit

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Surface Mount Contact

- Devices are mounted on top of a surface
- Faster than recess mounting
- More exposed to tampering

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Recess Mount Contact

Mounted in a hole drilled into a surface so that the object is flush with the top of the mounting surface

Looks neater

More secure because the wiring and switch location are concealed

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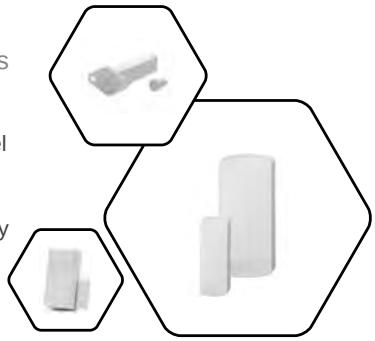
Built in Transmitters

- Transmitter to connect to wireless control panel is built in
- May use standard or longer life lithium battery
- Make sure it is compatible with your panel



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Where to Use Magnetic Contacts

- Used on doors and windows
- Switch is placed on frame
- Magnet is placed on door or window

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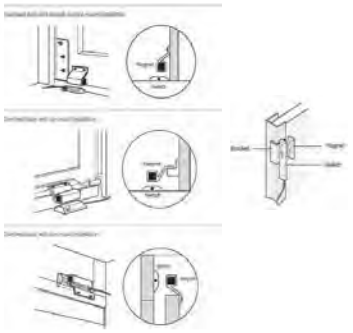
Rollu oors

- Mount Rollup door contacts on the side with the lock.
- Make sure door does not pull up far enough to trip the switch
- Make sure the magnet is not mounted directly to metal



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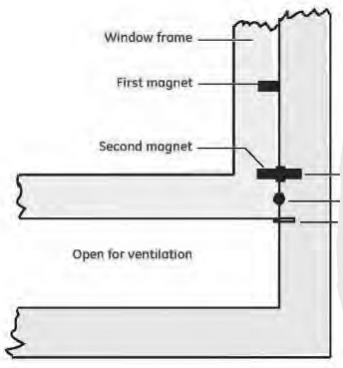

Window Ventilation Without False Alarms

- Install two magnets
- One to line up when window is in Closed position
- 2nd lines up with window opened for ventilation

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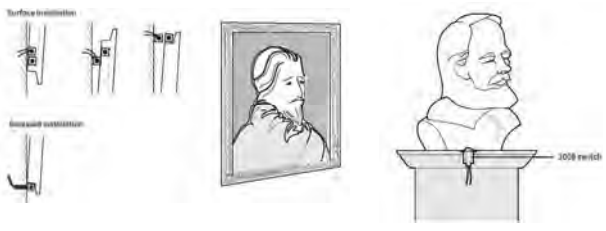
Monitor Artwork

Contacts can be used to monitor Artwork



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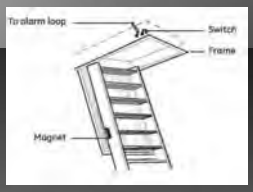
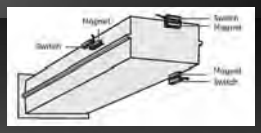
Monitor Drawers & Attics





Contacts can be used to monitor drawers & attics

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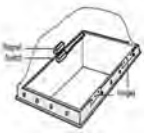
Monitor Hatches & Skylights

Contacts can be used to monitor Hatches & Skylights



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Roller-plunger Contacts

- Used on doors, windows and cabinet doors
- Plunger held in when door or window is closed
- These sensors depend on direct physical operation or disturbance of the sensor to generate an alarm
- Spring-loaded or plunger devices trigger when a door or window is opened

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Roller-plunger Contact Installation

- Install on hinged side of door
- Only hermetically sealed, watertight and airtight switches should be used
- Should not be used on poorly fitting doors and windows

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Burglar Alarm Systems

Glassbreak Sensors

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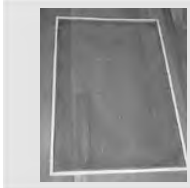
Glassbreak Sensor Types



- Acoustic
- Shock
- Acoustic/Shock
- Screen

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Acoustic Glassbreak Sensor

- Acoustic Sensors listen for the sound of breaking glass
- Click on the icon to hear the sound

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Acoustic Glassbreak Sensor

- The sensors are housed in a single unit and mounted on a stable wall or ceiling facing the main glass surface

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Shock Glassbreak Sensor

- Shock sensors feel/sense the typical 5 KHz frequency shock wave that is created when glass is broken
- When the processor detects this shock it signals an alarm
- The sensors are housed in a single unit and mounted on the glass

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Acoustic/Shock Glassbreak Sensor

- In dual-tech Acoustic/Shock Glassbreak sensors, an acoustic device is linked with a shock device
- This combination uses the complementary capabilities of both devices and provides for a low false alarm rate sensor

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Applications - Small Rooms

- False alarms are more likely in small, acoustically live rooms such as small kitchens, glass entry airlocks, stairwells, small glass offices, and utility rooms
- Try shock sensors
- If you use acoustic sensor make sure to fully test

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Applications - Large Rooms

- Be careful to match sensor range to room size
- If the sensor range extends beyond the room boundaries it is vulnerable to false alarms

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Applications - Rooms with cleaning crews

Do not arm Glassbreak Sensors while cleaners are present

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Applications French doors & small windows

- Small windows have unique properties when they break
- Sound output may be low since there is not much glass to break
- Glass may pop out of the window frame when hit instead of breaking
- Modern French doors are usually two large panes of glass with false dividers between them

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Applications - Windows with film

- Tinted film does not affect shock sensors
- Mount shock sensors on the glass not on the film
- Armor-coated glass may reduce shock senso range

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Applications - Insulated glass

- As long as the inside pane of the glass breaks, the sensor will detect the break
- It is possible to break the outside pane of glass without setting off an alarm

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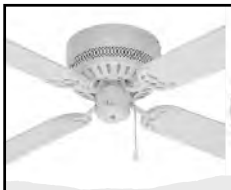

Applications - Loud Environments

- Do not use Dual Technology Acoustic/Shock Glassbreak Sensor at places with loud music, clanging pots and pans, gym weights, and ceiling fans or sites with high levels of radio interference

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Applications - Glass display & jewelry cases

- Glass display case are extremely *live* and are vulnerable to false alarms if the case is accidentally struck by keys or other metal objects
- Acoustic sensors are only appropriate where the sensor will only be armed when the premises are not occupied

For occupied or 24-hour protection, use shock sensors

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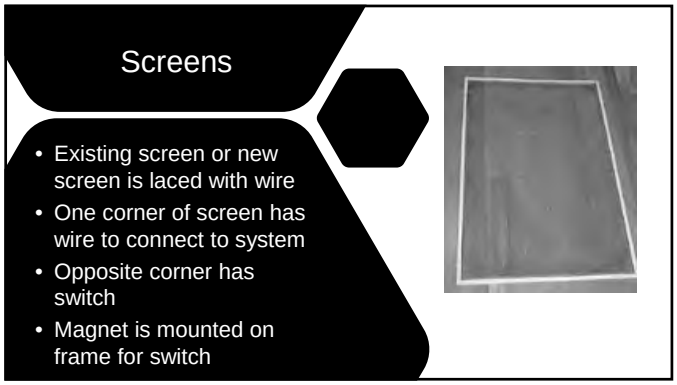

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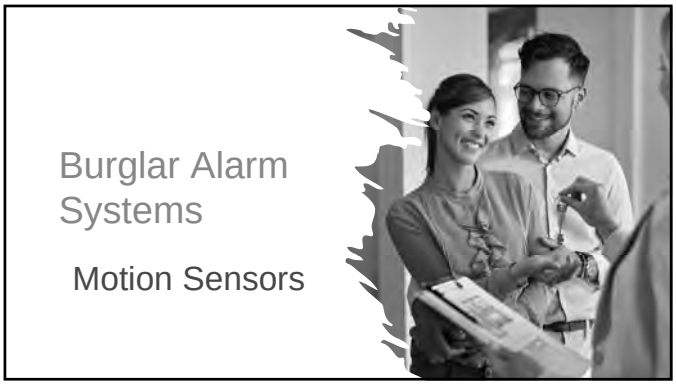

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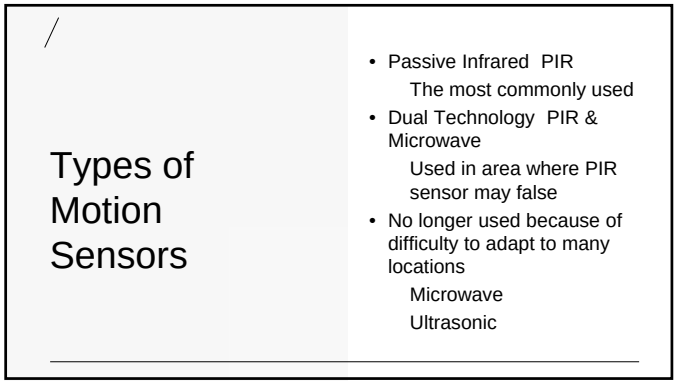

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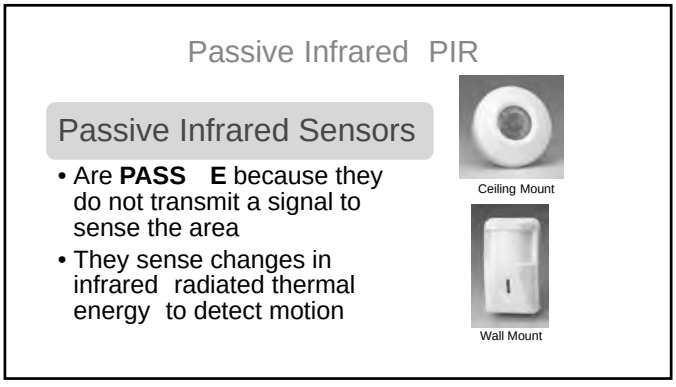

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Infrared Energy

- All objects give off infrared energy
- An Infrared sensor can see the how much energy each object gives off

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How it Works

- Simple PIRs look for a contrast between the background and the moving object.
- When the radiation change captured by the PIR exceeds a certain pre-set value commonly a 3 degree change , the thermal sensor produces an electrical signal which is sent to a built-in processor for evaluation and possible alarm.

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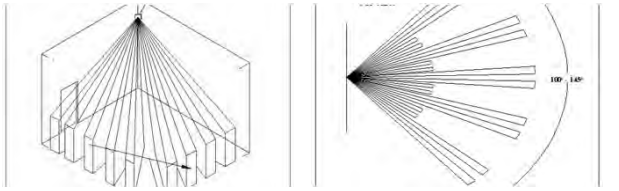
PIR Patterns

Variety of patterns and ranges are available



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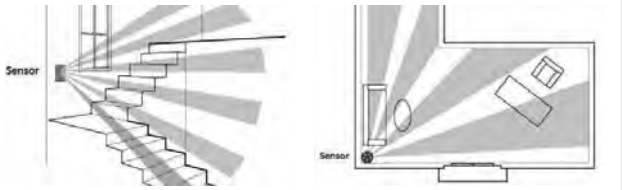
Location Options

Mount to ensure proper operation maximum coverage, minimal blockage



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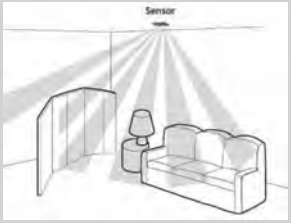
Ceiling Mount

- Provides complete coverage of rooms with obstructions such as half walls and shelving that can block wall mounted sensor coverage



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Avoid Occupied Areas

- Avoid areas that will be occupied while system is armed
- Normal human activity should not impact the sensor
- Connect the motion sensor to a zone that is not active when the system is armed

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Pets

- Because PIR sensors are sensitive to moving, heat-radiating sources, they can be triggered by animals as well as humans.
- To avoid this false alarm hazard, do one of the following
  - Use a sensor with pet immunity
  - Use a sensor with a pet alley lens

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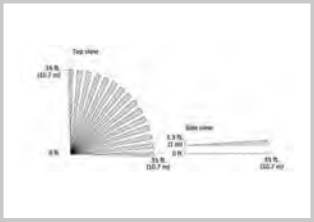

Installation with a Pet Alley Lens

- Mask the sensor to avoid objects a pet could jump on
- Size of the pet should also be considered
- Remind the alarm user that furniture moved into the sensor coverage pattern can give a pet a place to climb or jump and can result in false alarms

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Antimasking

- Optional technology that looks for a masking tamper and notifies the system of the problem
- Prevents the intruder from blocking the detector to return later

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Explosive Atmospheres

- Areas such as munitions depots, grain storage areas, and chemical plants can involve explosive atmospheres
- It is imperative that PIR sensors used in such areas contribute no electrical signal or field that could cause ignition

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Dual-Technology Motion

- PIR combined with Microwave
- Both sensing elements are located in a single casing, and are connected electronically by using the AND Logic function.
- Since the two sensors will not sense an intrusion precisely at the same instant, the system is designed to generate an alarm when both sensors produce an output in a pre-selected time interval.

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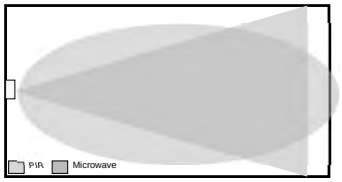

Dual Tech Motion Detectors

- **erhead ie**
  o atterns

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Burglar Alarm Systems

Other Sensors

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Audio

- Audio detectors listen for noises generated by an intruder s entry into a protected area
- If a certain amount of noise is detected from a monitored area within a selected time period, an alarm signal is generated
- Operator listens to site to decide what is going on

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Outdoor Sensors

- **E terior Acti e n rared** Beams are sent between posts
- **E ternal Micro a e** Beams are sent between posts

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Household Fire Alarm Systems

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Household Fire Alarm Systems

Basics

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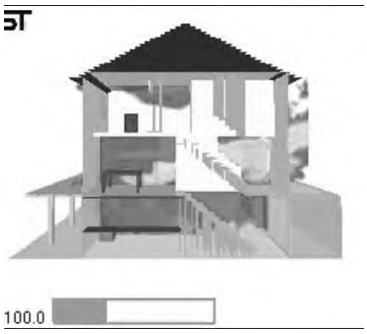
Fire Effects

Fire produces a hostile and often fatal environment



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The Fire Threat

Source NFPA

4

Products Of Fire

- Sensors look for products of fire

5

Fire Alarm Objectives

- Indicate & warn of abnormal conditions
- Provide sufficient warning to allow occupants to escape
- Summon appropriate aid
- Control facilities to control the fire
- Enhance the protection of life
- Reduce property loss & damage

6

Fire Alarm Systems


Initiation Devices (sensors)

Control Unit & Power Supplies


Notification Devices (at least one warning device)


Signaling Communications capabilities may be included to alert someone off site when the alarm is activated

7

Who is the AHJ anyway?

- "The organization, office or individual responsible for approving equipment, installation or procedure" - *NFPA*
  - Fire Department: Chief, Fire Marshal
  - Department of Labor
  - Health Department
  - Insurers
  - Owners

8

The AHJ can approve & accept products & procedures.

- "**Approved**" indicates they will certify and support those products, applications or procedures
- **"Listed"** means that a product has met certain qualifications and testing criteria - U.L./F.M
- "**Accepted**" means that the AHJ considers it "adequate or equivalent" to satisfy a requirement or standard

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Carbon Monoxide Poisoning

- Each year in America, unintentional carbon monoxide poisoning claims more than 400 lives and sends another 20,000 people to hospital emergency rooms for treatment.

Source: USFA

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What Is Carbon Monoxide?

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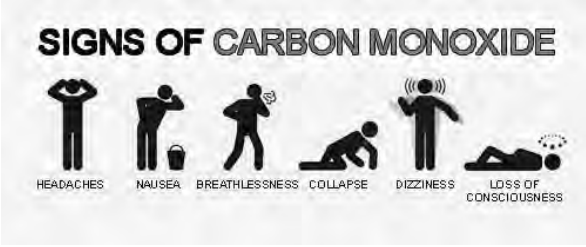
Effects of Carbon Monoxide?



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Where Does Carbon Monoxide Come From?

- CO gas can come from several sources:
  - gas-fired appliances
  - charcoal grills
  - wood-burning furnaces or fireplaces
  - motor vehicles.

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Household Fire Alarm Systems

Initiating Devices

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Residential Initiating Devices

- Types of Initiating devices used in residential settings include:
  - Manual Pull Stations
  - Fixed Heat Detector
  - Rate of Rise Heat Detector
  - Photoelectric Smoke Detector
  - Ionization Smoke Detector

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Manual Pull Stations

- Manually activated device generally used to activate the fire alarm.
- Types are Single action with require just 1 action (such as pulling down) double action pull that require 2 actions (such as pushing in and then pulling down),

Single Action

Double Action

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Fixed Heat Detector

- Detector that will trigger an alarm when the temperature at the device reaches a preset limit.
- Can be
  - Wired or Wireless.
  - Conventional, analog or addressable.
  - Self restoring or single use.
  - Fixed or analog
  - Available in variety of temperature settings.

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Rate of Rise Heat Detector

Detector that will trigger an alarm if the temperature at the detector increases at a preset rate.

- Could be Wired or Wireless.
- Could be conventional, analog or addressable.
- Could be self restoring or single use.
- Available in variety of temperature settings.

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Combination Heat Detectors

- Triggers when temperature increases at preset rate or when temperature reaches preset limit
- Usually, self restores
- Variety of temperature settings

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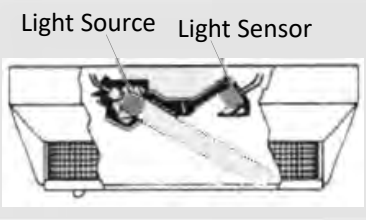
Heat Detector Locations

- Heat detectors are used where smoke detectors are not appropriate

20

Photoelectric Smoke Detector **Normal Situation**

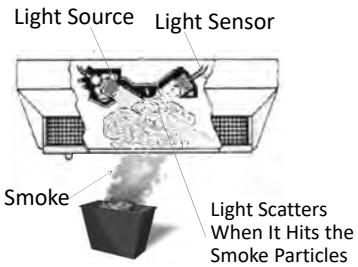


- Pulsed Light is sent into Chamber
- The light normally avoids the sensor

21

Photoelectric Smoke Detector **Alarm Situation**

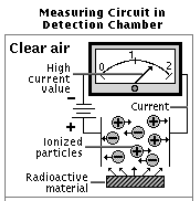
- Smoke reflects light into the sensor
- The reflected light causes the detector to alarm

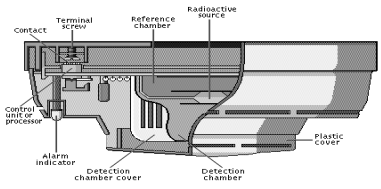


22

Ionization Smoke Detector **Normal Situation**

Current Flows

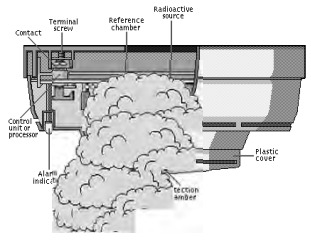


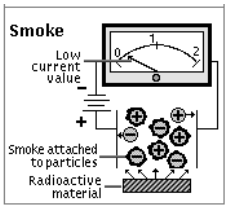


23

Ionization Smoke Detector **Alarm Situation**

Current Blocked





24

Photoelectric vs Ionization

25

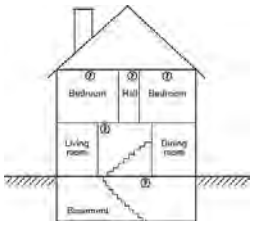
Sleeping Area Spacing

- Where required, approved single- and multiple-station smoke alarms shall be installed as follows:
  - In all sleeping rooms
  - Outside of each separate sleeping area, within 21 ft of any door to a sleeping room, the distance measured along a path of travel
- A smoke alarm should be located between the sleeping area and the rest of the dwelling unit as well as in each bedroom.

26

All Levels

- On each level, including basements
- On every level of a residential board and care occupancy (small facility), including basements and excluding crawl spaces and unfinished attics



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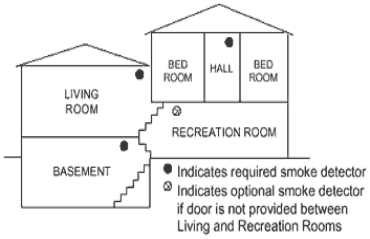
Split Level Arrangement



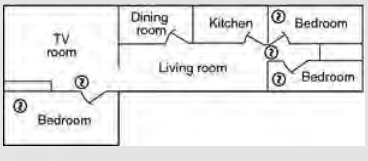
28

Smoke Detection Locations

- In the living area(s) of a guest suite
- In the living area(s) of a residential board and care occupancy (small facility)
- On every level of a residential board and care occupancy (small facility), including basements and excluding crawl spaces and unfinished attics

29

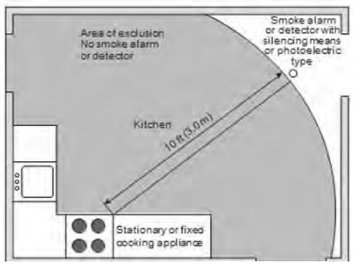
Separate Sleeping Areas



- In Dwelling Units With More Than One Sleeping Area, A Smoke Alarm Should Be Provided To Protect Each Sleeping Area In Addition To Smoke Alarms Required In Bedrooms.

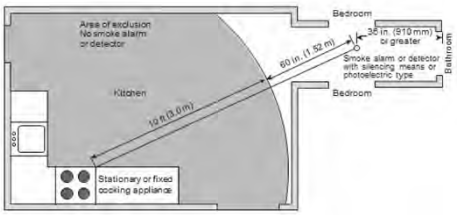
30

Example of Zone of Exclusion (gray area) Within Typical Residential Kitchen



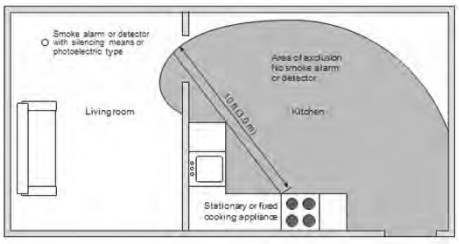
31

Example of Zone of Exclusion (gray area) Within Typical Residential Kitchen



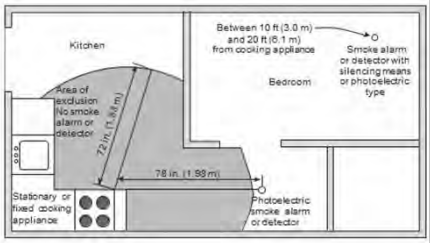
32

Example of Zone of Exclusion (gray area) Within Typical Residential Kitchen



33

Example of Zone of Exclusion (gray area) Within Typical Residential Kitchen



34

CO Detectors

- Detects a toxic colorless and odorless gas
- All CO detectors should be installed in accordance with NFPA 720-2012 — the *Standard for the Installation of CO Detection and Warning Equipment* — which defines standards for both commercial and residential installations of CO detectors.

35

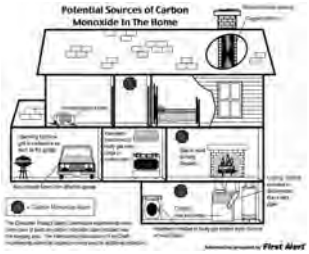
CO Detectors- Commercial

- Carbon monoxide detectors shall be installed in accordance with the manufacturer's published instructions in the following locations:
  - On the ceiling in the same room as permanently installed fuel burning appliances
  - Centrally located on every habitable level and in every HVAC zone of the building

36

CO Detectors - Residential

- Carbon monoxide alarms or detectors shall be installed as follows:
  - Outside each separate dwelling unit sleeping area in the immediate vicinity of the bedrooms
  - On every level of a dwelling unit, including basements
  - In other locations where required by applicable laws, codes, or standards



37

Household Fire Alarm Systems

Notification Devices

38

Noise Levels

Clearly audible over background noise with all intervening doors closed (75db at the pillow)

Noise levels above 105 dBA will require a visual device

39

Hearing Impaired

- If household has one hearing impaired occupant, visible signal required

40

Interconnection

Anytime more than two visuals can be seen, they must be synchronized

New construction- Activating one detector shall cause alarm to sound in all detectors

41

Holdup, Robbery, Duress, Panic or Emergency Alarm Systems

1

What is a Robbery

- A robbery is the unlawful taking or attempted taking of property that is in the immediate possession of another by force or threat of force

2

Robbery Alarm Objectives

Used to notify authorities that a hold-up, duress, panic or emergency is in progress

3

Several Types

Robbery or Hold-up
- Usually Silent

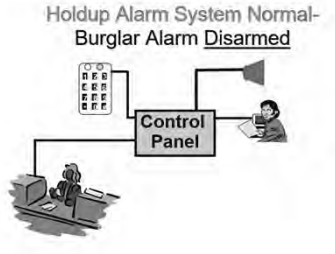
Duress Or Ambush
- Usually Silent

Panic or Emergency
- Usually Audible

4

How They Work

- Activated by inconspicuous devices
- Triggers communications to alert someone off site



5

Buttons

- Button is designed to generate an alarm signal by the manual activation of a device intended to signal a robbery, holdup or emergency in progress
- Depressing the button closes or opens the circuit to indicate an alarm
- Can be in a fixed location or use wireless signal to be portable
- Usually concealed

6

Single Action Buttons

- Only requires pressing the button to activate.
  - Does not allow you to identify which device was tripped
  - Resets after use

7

Portable Buttons

- **Porta le e o s**, used to allow alarm users to arm or disarm their systems, often have a single-action panic button that can too easily be activated.
- Key fobs regularly find their way into the hands of children, who regard the fobs as playthings and activate a false alarm.
- **Porta le Pendants**, worn by alarm users around their necks, are easily activated when the wearer inadvertently bumps or presses the exposed button against an object.

8

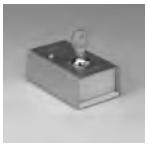
Keypad Buttons

- Pressing a button on the keypad generates an alarm signal.
- May activate immediately or require the button to be held.

9

Latching Locking Buttons

- Allows you to ID which device was tripped
- Needs to be reset after use
- Buttons remain in position after they are pressed until they are reset



10

Dual Action Buttons

- Require pressing and holding the button for a specified length of time or pressing two buttons to activate

11

Magnetic Lever Switches

- Use a magnet and reed switch encased in a hinged case
- When the case is pulled or opened the magnet is separated from the switch to change the status of the switch

12

Piezo Pressure Strips

- Are concealed in an area that would not normally be subject to enough pressure to operate the switch
- When sufficient pressure is applied, a processor activates to generate an alarm

13

Button Locations

- The button is usually concealed in a location to allow it to be pressed without being noticed by the robber

14

Button Locations

- Do not use in areas where items will be stored around or on top of the device
- Boxes may shift or fall and hit the button

15

Duress Code

- Allows an alarm user to turn off an alarm system by entering a special code in the system's keypad which then sends a signal to the alarm company that the alarm user is being held hostage
- When the alarm company receives a duress code, they report a silent alarm indicating a hostage situation to law enforcement
- Many companies do not call the alarm user before reporting the alarm

16

Duress Code Issues

- When an alarm user enters the Duress Code by mistake, because the alarm is silent, the user is not aware that armed law enforcement personnel may be responding
- This creates a dangerous situation for both the alarm user and law enforcement personnel

17

One Plus Duress

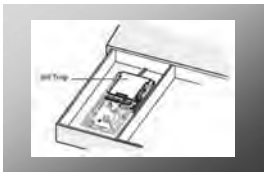
- Public safety and alarm associations agree that you should not install one-plus duress alarms.
- A One Plus Duress Alarm is the manual activation of a silent alarm signal by entering at an arming station a code that adds one to the last digit of the normal arm/disarm code e.g., normal code 1234, one plus duress code 1235
- The problem is that the alarm user may forget about the one plus duress feature and accidentally press the code.
- Because it is silent the user will not know what they have done until law enforcement arrives.

18

Foot Rail- Kick Bar

- Floor mounted arched enclosure that contains a switching device that operates when a person's foot is slid along the floor under the arch to make contact with a pivoting bar.
- Most foot rails lock in place when activated until they are reset by a key.

19



Money Clip

Placed in a cash drawer, with the bottom bill of a stack inserted in the switch.

The alarm is activated by removing that bill.

20

Access Control Systems

1

Access Control Systems

Overview

2

Access Control Defined

- A system to keep unauthorized personnel from accessing entering or egressing exiting a certain building, area, office, or other secure point.

  Typically composed of a locking mechanism mag-lock, strike, bolt and reader stripe, proximity, biometric or button.

3

Access Control Objectives

Allow or deny	Allow or deny access/egress based on possession of a certain item or physical trait.
Track	Track activity through a facility
Report	Report activity through a facility
Access	Access control is NOT time and attendance. Consult the Department of Labor before using access control system for time and attendance.

4

Access Control Readers

- Reads and decodes information to be processed by the access control system.


Pro imit


e ad


Retina Scan


Fin er rint


Palm eometr

5

Exit Egress Control Devices

- Readers for anti-pass back or traffic flow control
- Buttons
- Motions and mats
- Door hardware

6



Locking Mechanism

- Mag-lock
- Door Strike
- Electric Locks

7

Access Control Systems

Codes & Standards

8

Which Codes or Standards Apply

Check with your local Authority Having urisdiction AH

Local fire marshals office is a good place to start

Review blueprints and plans with the AH **e ore** you install any equipment

9

Identify Egress Requirements

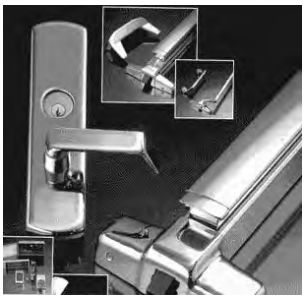
*Do **not*** prevent or delay a person's ability to exit an area

Doors need to be opened readily from the egress exit side, whenever the building is occupied

10

"No Special Knowledge"

- Any person should be able to unlock a door and open it without any previous training or reading instructions



11

Required Exit Devices

- If you electronically lock & unlock the door, you will need
  - a sensor that detects an occupant as they approach the door and unlock the door AND
  - a manual release device
    - located 40 to 4 inches above the finished floor
    - within 5 feet of the exit door.
    - identified with a sign that reads PUSH TO E IT .
    - That directly interrupts the power to the lock independent of the access control system electronics
  - Doors need to stay unlocked for at least 30 seconds

12

Entry Door Requirements

- Unlock when the building automatic sprinkler or fire detection system, if provided, is activated. The doors shall remain unlocked until the fire alarm system has been reset.
- Unlock from the exit side when the building is open to the general public.

13

Access Control Systems

Credentials

14

Types

- Traditional
  - Magnetic stripe
  - Wiegand strips
  - Barium ferrite
  - Barcode Cards
  - Hollerith Cards
  - Infrared
  - Optical
- Contactless
  - Proximity
  - Contactless smart cards
- Biometrics

15

Style

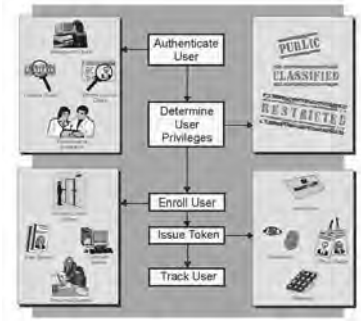
Card

e

Fo

16

Credential Steps



17

Credential Security

18

Access Control Systems

Readers & Keypads

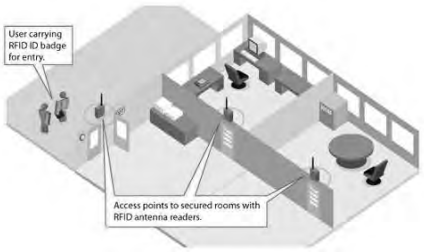
19

Reader Styles

- **S i e** readers require the user to drag a credential along a path at certain speed within a slot or guide.
- **nsertion** readers require the user to insert a credential into a slot at a particular speed
- **Contactless or Pro imit** readers scan the credential from a distance and no physical contact between the credential and the reader is required

20

RFID Systems



21

Keypad Operation

- Can be used in conjunction with a credential or standalone.
- Generally a four to ten digit number is used for a keypad combination

22

Access Control Systems

Locks & Barriers

23

Types

Loc s	arriers
Electric Stri es	Parking Gates
Electric olts	Overhead doors
Ma netic Loc s	Turnstiles
Electromechanical Loc s	Elevator control
ertical E it Rods	

24

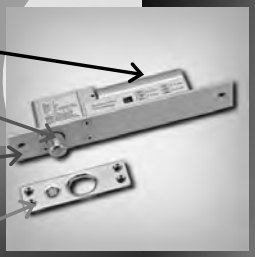
Electric Strikes

- Provide remote release of a locked door
- Allow the door to be pulled or pushed open without retracting the latchbolt
- This occurs by the releasing of the electric strike lip sometimes called a keeper or gate
- When the door closes the latchbolt rides over the lip and falls into the strike pocket

25

Electric Bolts

- Solenoid
- Bolt assembly
- Lock front or housing
- Mating strike plate or block



26

Electromagnetic Locks

- Electromagnet is normally mounted on the door frame
- Strike plate or armature is mounted on the door

27

Electromechanical Locks

- Standard locks modified so that they can be controlled with electricity, in addition to being controlled with knobs or levers

28

Barrier Gate or Arm

- Motorized unit which raises a wooden or fiberglass gate arm from a horizontal position to a vertical position to allow the passage of a vehicle
- Gate arms allow pedestrian traffic and can be raised and lowered very quickly

29

Swinging or Sliding Gate

Swing To Each Side

Slide To One Side

Tilt Up

30

Turnstiles

- Can be used in high traffic areas to restrict entry to a single person at a time
- Usually observed by a guard or attendant who can deal with anyone attempting to piggyback

Standard

Optical

31

Access Control Systems

Exit Devices

32

Exit Buttons

Buttons that make or break the power when pressed

33

Exit Sensors

- Sensors used for sensing when someone approaches a door to unlock the door at the proper time

34

Exit Bars

- ***Mechanical exit bars*** use a switch that is depressed when the bar is pushed to break or make a circuit to unlock a door
- **Electronic e it ars** use the changes your body makes in a capacitance field to release an electronic or magnetic lock or strike
- **tical e it ar** uses two directionally opposed infrared detection circuits to sense an exit request. As a person touches the bar the light beam is broken

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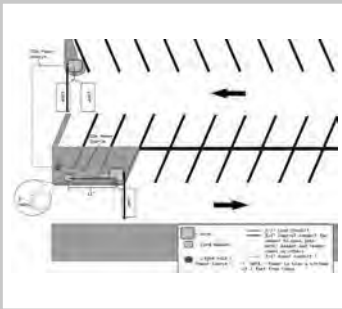


Vehicle Loop Detectors

Use a coil of wire buried in the driveway which is connected to an inductive loop detector

36

Video Surveillance Systems

1

Video Surveillance Systems

Overview

2

Video Surveillance Systems

- AKA - Closed Circuit Television Systems CCTV .
- Systems composing
  - television camera
  - video monitor
  - transmission medium Cable, fiber or wireless connecting the two

3

Video Surveillance Systems Objectives

- Monitor the premises.
- Record Activity
- Deter crime
- Alter behavior
- To NOT alter behavior covert

4

Common Uses

- Cameras can be found in many places, including airports, casinos, banks, and the streets
- Cameras can be placed in inconspicuous or obvious places

5

Camera Types

Black and white
Color
Dome
Pan / Tilt / Zoom
Bullet
Vandal Proof
High Definition (mega-pixel)
or NTSC

6

Transmission Methods

Connecting the cameras to the recorder

- Coax (RG59U, RG6U, or RJ11U)
- IP based (Cat5e or Cat6)
- Baluns (video over UTP – unshielded twisted pair)
- Fiber Optics
- Wireless

7

Recorders

Video Cassette Recorder VCR

Digital Video Recorder DVR
PC Based Windows operating system
Imbedded typically Linux

Network Video Recorder

8

Video Surveillance Systems

Law & Standards

9

Guidelines On Video Surveillance

- Covert video surveillance is illegal when
  - The subject has a reasonable expectation of privacy 4th Amendment rights i.e. in a bathroom motel room changing room
  - If audio eavesdropping is also taking place

10

Guidelines On Video Surveillance

- Covert surveillance may be illegal when
  - The person with authority over the premises has not consented
  - The reason for the video surveillance fosters an illegal purpose

11

Law on Taping

Mechanical or electronic interception of audio is unlawful without a party to the conversation s consent

This is Federal Law and most states have similar statutes. Video taping is another matter

There is no Federal Law that prohibits video recording

Video taping legislation is likely to pop up in most jurisdictions and you should watch for it

- http //www.kirschenbaumesq.com/articles.htm

12

United States Codes, Title 1 , Section 2510

- Oral communication means any oral communication' uttered by a person exhibiting an expectation that such communication is not subject to interception under circumstances justifying such expectation

13

Avoid Smoke Detector Cameras

A smoke detector has one purpose and that is to protect people against fires, Keeping non-working fire detectors with hidden cameras off the market protects the public from a false sense of security and a very real invasion of their privacy. NY Attorney General

The Fire Code provides that items such as these non-working smoke detector cameras pose a fire safety danger because they present the public with a false sense of safety. Henrietta NY Fire Marshal

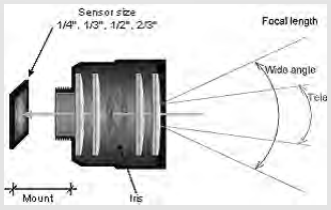
14

Video Surveillance Systems

Camera & Lens

15

Lens



- Collects the light from the scene and forms an image of the scene on the light sensitive area of the camera

16

Camera

Converts the visible scene formed by the lens into an electrical signal suitable for transmission

17

Box Camera

- Mounted to a wall or any vertical area

18

Infrared Camera

- Uses infrared light instead of the regular lighting spectrum in order to produce better images in complete darkness or low light conditions

19

Bullet Cameras

- Most bullet cameras are weatherproof and sealed without the ability to use different lenses
- Small size and integrated design
- Some bullet cameras have infrared LEDs built-in

20

Dome Camera

- Domes cannot be easily manipulated or vandalized
- Direction the camera is pointing is hidden

21

Board Cameras

- Basically fixed lens mounted on a circuit board
- May be packaged in a small case Mini Cameras or dome Mini Dome or simply sold unpackaged

22

Concealed Cameras

Use of cameras that look like smoke detectors may violate fire codes

23

Video Surveillance Systems

Mounts & Hardware

24

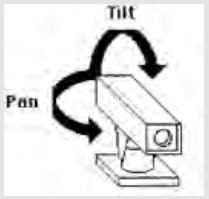
Mounting Hardware

- Rated for
  - Indoor Outdoor
  - Weight they can hold
  - Explosion proof

25

Pan Tilt

- **Pan** - Scan left and right
- **Tilt** - Look up and down



26

Scanner

- Pan or Scan left and right
- No remote control moves automatically form side to side
- Up and down direction is set manually

27

Dome

- Plexiglas hemisphere
- Tinted Dome may prevent subjects from seeing which direction a camera is pointing

28

Indoor Housings

29

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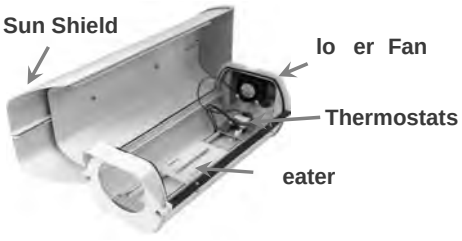

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Video Surveillance Systems

Monitors, Controls & Transmission

31

Monitors

- Displays the image from the camera by converting the electrical video signal into a visible signal on the monitor screen

32

Distribution Amplifiers

- Takes the single video signal and reproduces the exact signal into multiple outputs

Back of Amp

33

Switchers

- Selects Cameras manually or automatically to display their images on single or multiple monitors, recording equipment or a printer

34

Video Multiplexers

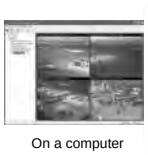
- Takes multiple camera signals and combines them onto one channel so you can record them on a recording system of your choice i.e. VCR, DVR, DVR software, etc.

Slide 6-35

35

Internet Connection

- Allows viewing and perhaps control at a remote location



On a computer

On a mobile computer or phone

36

Recording Solutions

- VCR
- DVR
- PC Based
- Networked

37

Recording Periods

hour Records in real time	
Time la se Skips frames to reduce storage	
E ent Records based on an event	

38

Compression

- Information is captured at the source and is encoded compressed by an encoder
- The compressed data can then be transmitted across a network or telecommunications link and decoded decompressed by a decoder
- The decoded information can then be displayed
- The encoder/decoder, or codec can be software, hardware, or both

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Transmission Link

- Carries the electrical video signal from the camera to the remote monitor
  - Coaxial Cable
  - Unshielded Twisted Pair- UTP
  - Fiber optics
  - RF
  - Microwave
  - Infrared
  - IP

40

Site Sur e

Site Survey

1

Burglar Alarm Survey

- Are customers worried about detection while at the location, or away
  Motion detectors are usually disarmed while in stay mode
- Are doors tight enough for magnetic contacts
- Are windows moveable, fixed, or a mix of both
- Will there be partitions/areas

2

Fire System Survey

- Who is the AH on this project
- What fire code has been adopted
- Are their requirements beyond existing local and state fire codes
  insurance
- What occupancy classification
- Is the building sprinklered
- What if there are existing devices
  electrician installed smoke detectors

3

Access Control System Survey

- How many doors
- How many users
- What type of doors
  Are the doors sturdy
  Do they swing in or out
- What type of computer resources will be available to administer the system

4

Camera System Survey

- How much light
- How many cameras
- How much archival information
- How many frames/fields per second
- Will there be remote access
- What type of networking / IT resources are there

5

Use ob Documentation to

- Verify that equipment is appropriate
- Select locations
- Determine wiring requirements
- Select wiring paths

6

Verify That Equipment Is Appropriate

- Is it possible to get wire between the control and all the devices
- Will metal used in construction interfere with transmissions between devices
- Does air flow, size, window placement, etc. rule out some types of sensors

7

Check Construction

- Drywall, Plaster, Brick, Cinderblock
- Drop ceiling, attics, crawlspaces, unfinished basements
- Check if closets on each level line up
- Look for a utility room
- Hardwood floors or carpeting
- Can molding be removed

8

How To Find The Construction Type

- Tap on the walls to see if they are hollow
- Remove a switch or outlet plate to see what is behind it
- Check the attic, basement or crawl space
- Ask the site owner

9

Double Check

- Make sure that the system will work for the customer
- Do they have pets
- Are all areas of concern covered
- Can they live with the design

10

Setup the Right Coverage

11

Keep it Simple

- Over complicated systems can lead to
  - False Alarms
  - Service calls to explain operation
  - Dissatisfied customers

12

User Training

1

User Training

Prepare to Train

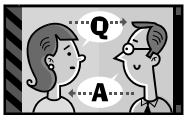
2

Review User Documentation Manuals & Instructions

- To properly demonstrate the operation of a system you need to be an expert in how it operates
  - Read the instruction manual
  - Run through the system until you are comfortable

3

Ask Questions



- Ask questions of users to determine
  - What they know about the system
  - Past experience with similar systems existing
  - Who will set up or program the system
  - Who will do periodic maintenance

4

Identify Training Objectives

- Decide which features to cover
- Proper training is a critical part of good customer service
- Get it right -return visits are costly
- Confirm who all the actual users are

5

Procure Develop Training & User Aids

- Write a script based on user documentation to train a customer
- Have manuals and videos on hand

6

User Training

What to Cover

7

Demonstrate System Functions And Capabilities

- Repeat a pre-developed script to train a customer.
- Demonstrate a system.
- Try different ways to train customers e.g. demonstration, video, written manual.

8

Guide User Through System

- Sequence the customer though the operation of the system.
- Use clear & understandable descriptions.
- Let the user show you each step.
- Involve the customer in the demonstration.

9

False Alarm Prevention

- Explain the impact of false alarms
  - Cost to police.
  - Danger to responders.
  - Cost of alarm fines.

10

If You Give Them a Key

- Stress that anyone with a key needs to be trained.
  - **isitors**
  - **Famil**
  - **Child Care Pro iders**
  - **Cleaners**
  - **Real Estate A ents**
  - **Contractors**

11

How to Cancel

Explain how to cancel an alarm.

12

Train User About Codes

- Explain difference between
  - Secret entry/exit code for keypad and
  - Identity code passcode, password which identifies user your alarm company and helps them prevent false dispatches.

13

Train User to Contact Alarm Company

- Notify alarm company
  - When remodeling
  - New furniture
  - Furniture movement in sensor path
  - New pets
  - Decorations in sensor path
  - Changes to phone lines
  - When going on vacation

14

Train User to Train Others

- Always be certain that all persons with a key to the premises
  - are trained to use the system.
  - Have an entry/exit code to turn the system on and off.
  - Have a passcode or password to give the monitoring company, which identifies them as authorized to be in the premises.

15

User Training on duress, hold-up or panic alarm

- When NOT to use your duress, hold-up or panic alarm
  - When you need fire or medical assistance.
  - To check to see how long it takes law enforcement officers to respond.
  - When someone has shoplifted merchandise.
  - To report a fight in the parking lot.
  - When an underage person attempts to buy alcohol.
  - To report that a vehicle has been stolen.
  - Any other circumstance in which you are not in a life-threatening or emergency situation.

16

Printed User Information

- Leave a packet at the time of sale and/or installation that includes
  - How to arm & disarm.
  - What happens when the alarm activates.
  - Procedures for canceling a false alarm.
  - How to reach the alarm dealer and the monitoring center.
  - Installer False Alarm Prevention Program checklist.
  - Customer False Alarm Prevention Program checklist.

17

Verify and Document

- Ask questions.
- Document any problems. experienced by the customer during training.
- Document when each customer is trained.

18

Ongoing User Training

1. Create bill stuffers that contain alarm prevention tips
2. Add false alarm prevention info to your web site
3. Offer re-education
   - After user error alarms
   - For new users

19

Continue the Training

- Add bulletins in invoices or newsletters
- Offer training to new employees or users
- Give refresher training after false alarms
- Use free resources available at alarmuser.org & nesaus.com


FARA False Alarm Prevention
information for alarm users

Your Alarm System, Its Battery Backup And False Alarm Prevention

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Use a Video

Available online alarmuser.org or www.nesaus.com

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