

Basic Security 101



Overview

- Components of an alarm system
- Technology behind the equipment
- Communication Platforms
- Industry Terminology
- False Alarm Tips
- DSC products

Components of an Alarm System

- Main Control Unit
- Keypad
- Input Devices (PIR, Contacts, etc.)
- Transformer
- Back-up Battery
- Telco Jack
- Output Devices (Sirens, Strobes)



System Configuration

Hard Wired



- An alarm system that uses wires to connect all of the input and output devices to the main control unit.

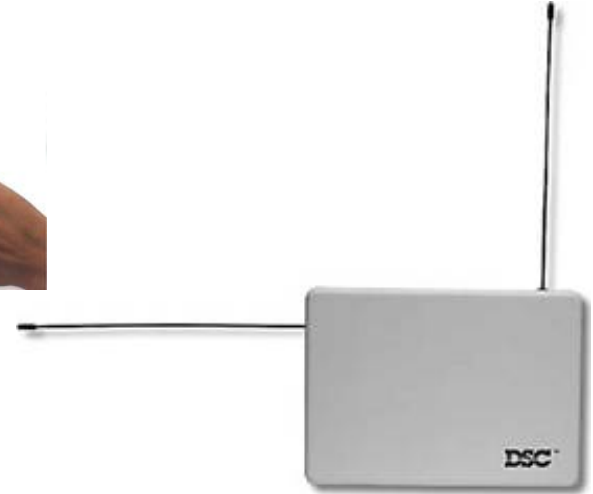
System Configuration

Wireless



- An alarm system that uses radio waves or RF to send intrusion or status signals from detectors to the control panel. A supervised system also monitors the condition of the transmitter as well as the battery. A supervised system will alert you of a transmitter problem where an unsupervised system will not.

System Configuration Hybrid

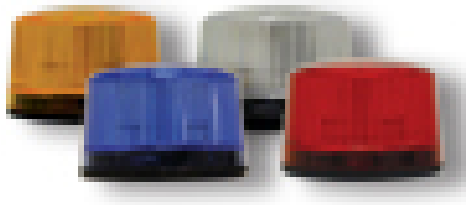


- An alarm system that uses both hardwired devices and RF devices to send intrusion or status signals from the detectors to the control panel. The hybrid system will utilize a RF receiver that is hardwired to the main control unit.

Input Devices

- Door/ Window Contacts
- PIR Detector (Passive Infra-Red)
- Dual-Tech Detector
- Glassbreak Detectors
- Smoke Detectors
- Heat Detector (Fixed & Rate of Rise)
- Water Sensors
- Gas Detectors (CO, Natural Gas, Propane)
- Hold-up Buttons

Output Devices



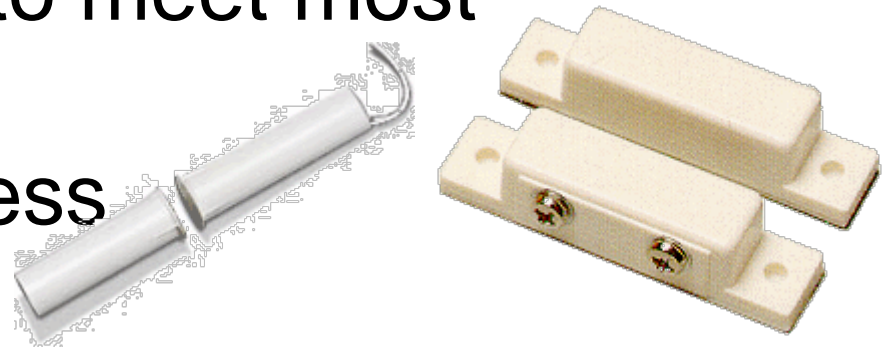
- Indoor Sirens
- Outdoor Sirens
- Armored Sirens
- Siren/Strobe Combinations
- Tamper Proof Sirens
- Multiple Coloured Strobes



Input Devices

Door/Window Contacts

- Devices designed to detect the opening of a door or a window
- The most common type is the magnetic contact that triggers after the disruption of current flow
- Many different types to meet most applications
- Hard-wired and wireless



Input Devices

Door/Window Contacts

- Recessed contacts
- Surface mount contacts
- Overhead door contacts
- Pull apart cords
- High security contacts
- Roller ball
- Plunger switch



Input Devices

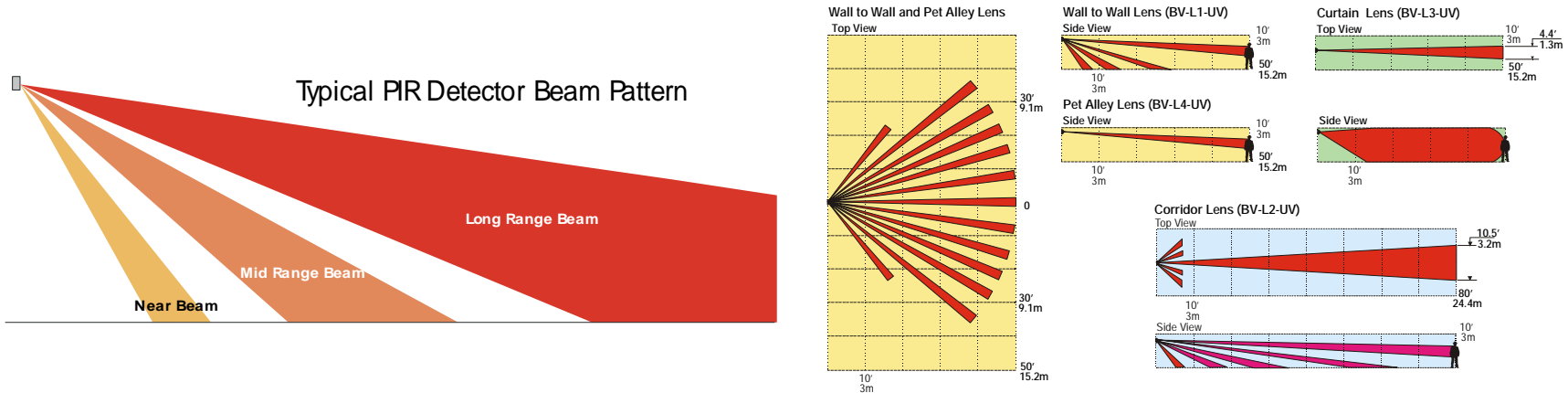
Fundamentals of PIRS

1. All objects emit IR (Infra-red Energy)
2. A PIR detector functions by detecting the difference in the IR energy between the environment within its detection range and any object that enters that environment



Input Devices

PIR (Passive Infra-Red) Motion detector

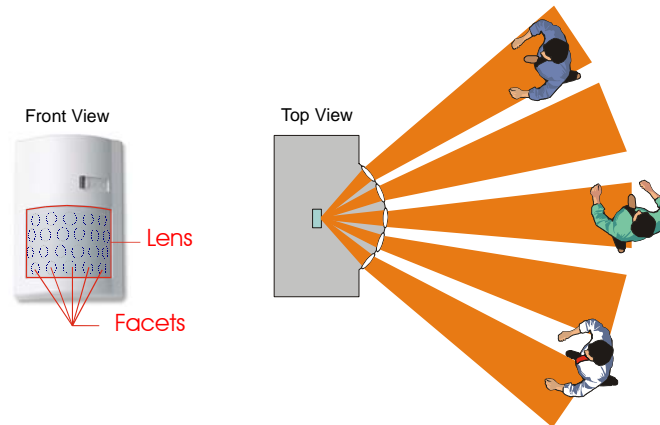


- The field of view and the optical path of each lens facet is commonly referred to as a “beam”. Normally there is a separation between the beam resulting in areas (blind spots) that the detector does not see

Input Devices

PIR (Passive Infra-Red) Motion detector

- A PIR “collects” the IR energy through a multi facet lens system that focuses the energy into the PIR sensor of the detector.
- An alarm is triggered when a temperature change is detected in the beam that differs from the environment.



Input Devices

PIR (Passive Infra-Red) Motion detector

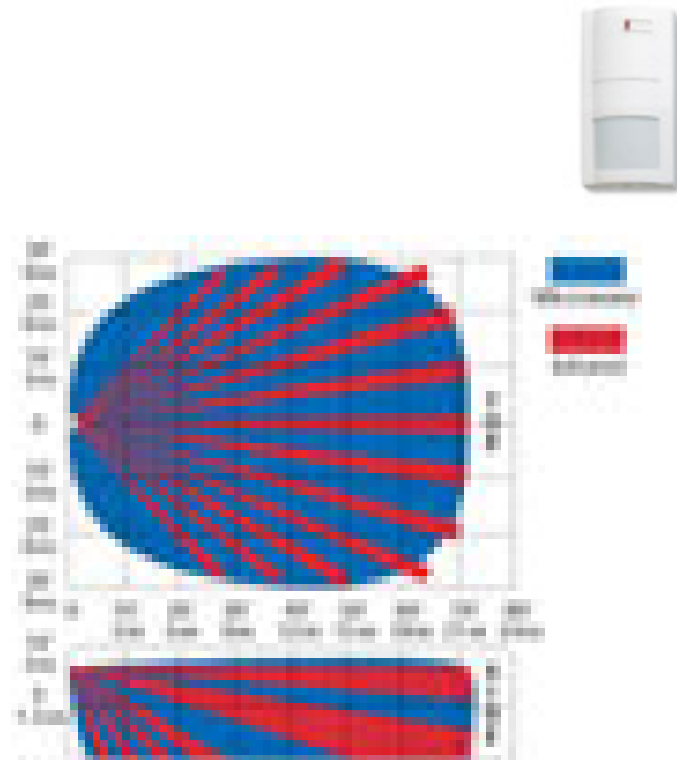
- Works on the principle of sensing infra-red energy (heat) emitting from an intruder's body
- More sensitive to perpendicular movement
- Will not detect through walls, glass or solid objects
- Most commonly used detector
- Hardwired or wireless



Input Devices

Fundamentals of a Dualtec Detector

- Utilizes more than one sensing technology to initiate an alarm condition
- Usually combines a PIR with a Microwave detector.



Input Devices

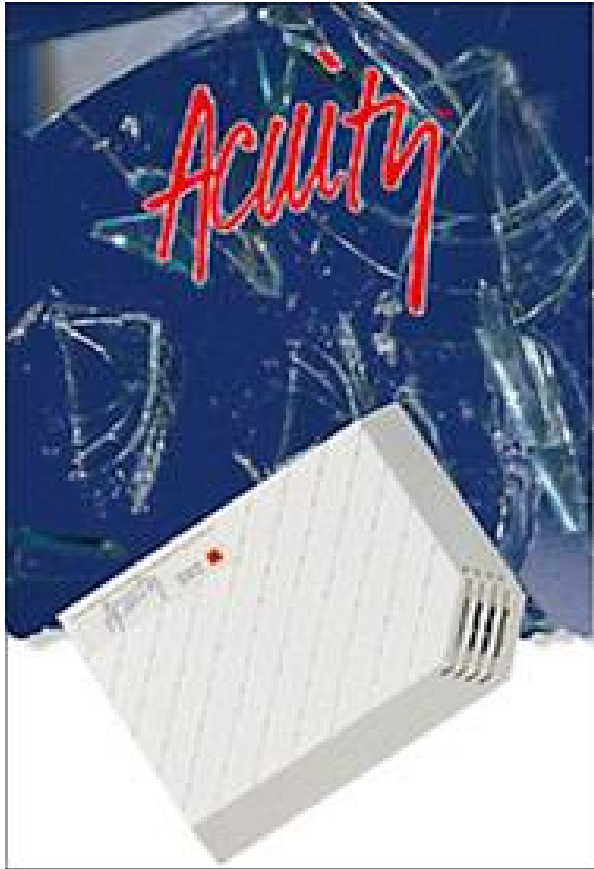
Dualtec Motion Detector

- In order to activate an alarm condition both technologies must trigger
- More stable and less susceptible to false alarms
- Mainly used in Commercial applications
- Microwaves can detect through solid objects
- Hard-wired



Input Devices

Glassbreak Detectors



- A device that is triggered by the sound of breaking glass
- Detects plate, float, laminated, wired or tempered glass
- Can be used to cover large areas of glass or as a second layer of protection
- Coverage is dependant on type of glass and physical environment
- Hard-wired or wireless

Input Devices

Smoke Detectors

- A fire detection device that triggers upon the detection of smoke
- Two main types of smoke detectors are Photo-electric and Ionization



Input Devices

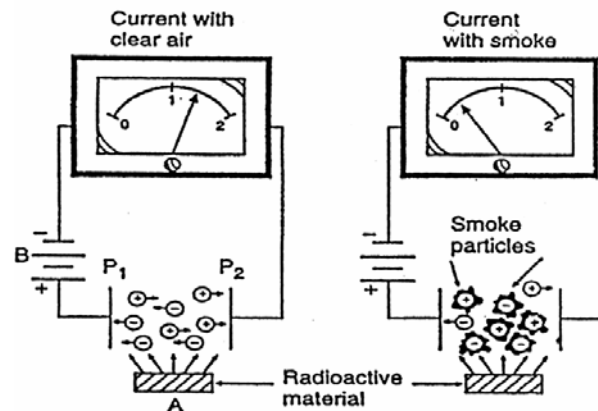
Ionization smoke Detector

- Best at detecting fast, flaming fires like grease fires
- Most sensitive to dark or black smoke
- Sensitive to steam, may cause false alarms if installed near kitchens or bathrooms
- Hardwired

Input Devices

How a Ionization Smoke Detector works?

- Uses a weak radiation source to ionize the air in the detection chamber
- Ionized air conducts an electrical current
- Detector circuit senses this current, if the current is present the alarm does not activate
- Smoke particles reduces the current and triggers the alarm



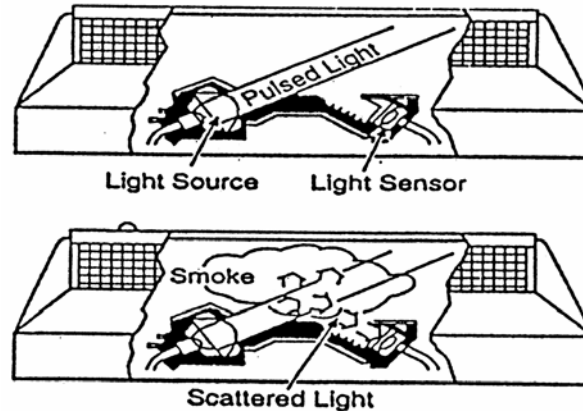
Input Devices

Photo-electric Smoke Detector

- Best at detecting slow, smoldering fires like furniture ignited by a cigarette
- Most sensitive to light gray smoke
- Not very sensitive to steam, so they are better for use near a bathroom or kitchen
- Hard-wired or wireless

Input Devices

How a Photo-Electric Detector works?



- A LED emits a beam of infra-red light in the detection chamber
- The detector circuit senses the light
- Smoke particles scatter the light and reduce the amount of light that reach the sensor in the chamber
- The alarm activates

Input Devices

Heat Detectors

- Two separate types fixed temperature and rate of rise (ROR)
- Fixed temp. normally set at 135F (57C) or 200F (94C) and activates once that temperature is reached
- ROR activates is the detector senses an abnormal increase in temperature
- Can be used in kitchens and furnace rooms



Input Devices

Fixed Temperature

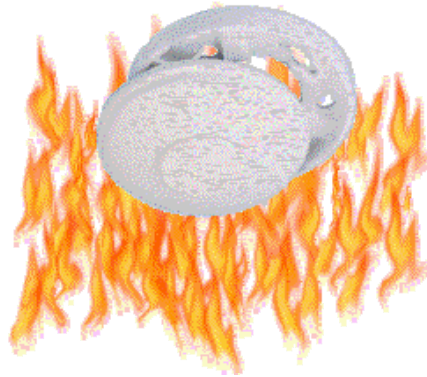


- **HEAT COLLECTOR:**
Two sections soldered together by fusible eutectic alloy. The lower section drops away at fusing temperatures and activates a plunger. The most common are rated at 135°F (57°C) and 200°F (94°C).

Input Devices

Rate of Rise Detectors (ROR)

- The rate-of-rise function detects heat quickly by responding to a rapid temperature increase. The pneumatic element responds to a rapid rise in temperature, approximately 15°F (8°C) per minute, when the air expands faster within the sealed chamber than it pressure can escape through the calibrated vent. The increase in pressure depresses the diaphragm, causing the electrical contacts to close the circuit.



Input Devices

Water Sensors



- Each sensor probe has two contacts. When a film of water forms a bridge between these contacts, the unit senses this and triggers the alarm output.

Input Devices

Temperature Sensors

- Can be mechanical or digital
- Can be set for high/low or fixed temperature formats
- May have capabilities for more than one probe
- Used for freezers, fridges and computer rooms



Input Devices

Gas detectors

- Devices used to detect harmful gases before levels reach critical
- Varieties include Carbon Monoxide, Natural Gas (Methane) and Propane
- Please refer to handout for explanation and installation procedures
- Hard-wired



Input Devices

Hold up and Panic Alarms

- Devices used to transmit or activate a hold-up or panic alarm
- Can be hard-wired, wireless or keypad activated
- Latching or non-latching mechanisms



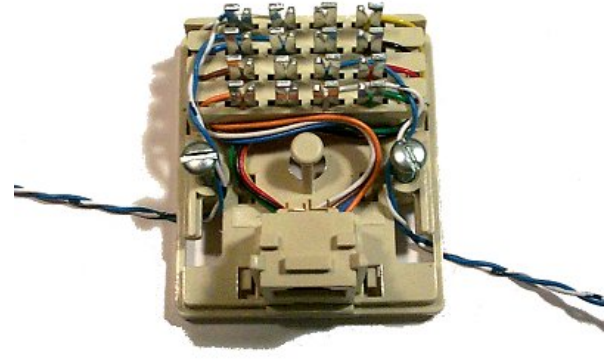
Communication

PSTN – Public Switched Telephone Network

- PSTN refers to the international telephone system based on copper wires carrying analog voice data
- Often called POTS – Plain Old Telephone Service



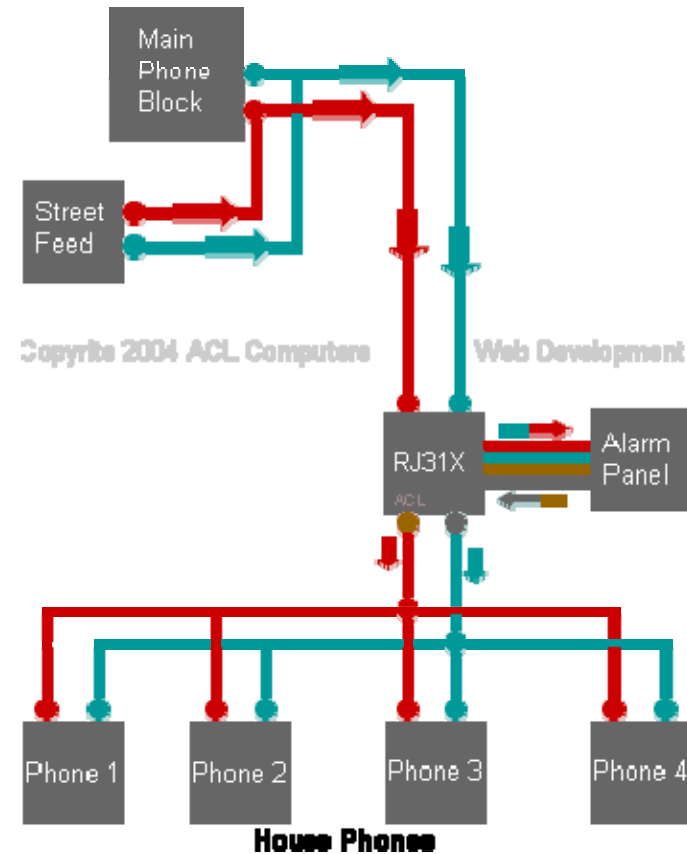
Communication PSTN Connection



- Utilizes a RJ31x (8 position) to connect to the alarm panel

Communication PSTN Connection

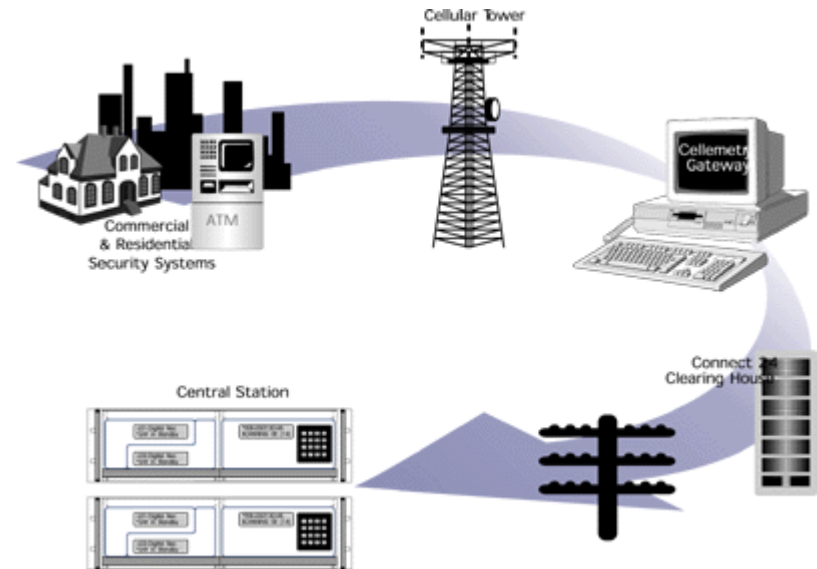
- RJ31x Jack allows the alarm panel to take priority over the phone line
- Susceptible to phone line cut
- Uses existing phone line – no extra costs



Communication

Celllemetry - Cellular Communication

- A device that transmits short messages via the control channel of the cellular network
- Does not need to utilize a phone line
- Protects against phone line cuts
- Can be used as a back up device for phone line failure or as primary means of communication to the Central Monitoring station



Communication

IP Communication

- Utilizes the internet to transmit alarms to the Central Monitoring Station
- Does not need to utilize a phone line
- Can protect against phone line cuts and provide line supervision
- Increased speed of signal transmission
- Bi-directional communication
- Some products offer a ULC rating

