



## SECURITY SYSTEMS

### GLOSSARY OF TERMS

#### **2 Wire**

Transmission medium using the same two wires for transmit and receive channels. Either leased line or dial up.

#### **4 Wire**

Transmission system using 2 separate pairs of wires for transmit and channels. Leased line or dial up can be achieved on PSTN by dialing 2 separate numbers.

#### **A/V**

Audio / Video

#### **AC Adaptor**

Also See: Power Supply - All CCTV devices require power of some sort. Electricity in the United States comes in one form, 110 to 120 AC. The AC adaptor converts the AC power to DC power and will adjust it to a specified amperage. Power supplies should come included with each item.

#### **Access Card**

Approximately the size of a credit card, these are specially coded cards given to employees and allow them access to secure locations or devices at work. Access cards utilize several technologies such as magnetic strips, Barium Ferrite, proximity (active or passive), and other methods. They are often 'swiped' and read by a device that allows the user or employee access.

#### **Access Code**

Similar to a password, this series of numbers or letters enables a user to access a system or computer. At job sites an access code can be the system or process that oversees employees or cars both in and out of certain areas.

#### **Access Point**

These are specific entry points in certain secure areas. A card reader and monitor switches allow authorized entry by individuals with access cards.

#### **ActiveX**

ActiveX is Microsoft software component technology, mainly used by Microsoft Windows. They facilitate sharing of information between differing applications. Digital video recorders utilize ActiveX to remotely view security cameras online.

#### **Activity Detection**

Multiplexers use this feature, which is a video motion detection technique, to give relay closure for alarms and to improve the update times of video cameras.

#### **ADDRESS**

A sequence of bits, a character or a group of characters that identifies a network station.

#### **AES**

Auto electronic shutter - the ability of the camera to compensate for moderate light changes in indoor applications without the use of auto iris lenses.

#### **AGC**

Automatic Gain Control. A circuit for automatically controlling amplifier gain in order to maintain a constant output voltage with a varying input voltage within a predetermined range of input-to-output variation.

#### **Alarm Input**

A connection from an alarm or sensor that triggers the CCTV unit to start recording if activated.

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## Alarming

Ability for CCTV equipment to respond to an external input, provide numerous functions such as switch to relevant camera signal and alarm start a VCR.

## Algorithms

Its general definition means a set of mathematical instructions to solve a task. In the field of video technology, they enable digital compression of the video picture.

## AM

Amplitude Modulation.

## Ambient Light Level

This is the amount of background light present at any specific time.

## Ampere (amp)

The unit of measure for the rate of electrical current flow characterized by the symbols **I**(in Ohm's law formulas) and **A**. One ampere is the current flowing through one ohm of resistance at one volt potential.

## Analog

Two main methods exist for representing data in electronics -- Analog, and Digital. Analog is pertaining to a mechanism that represents data by measurement of a continuous physical variable, as voltage of pressure.

## Analog System

Analog cameras are used most often in CCTV applications. Other examples of Analog devices are security VCRs, switchers, multiplexers, and quads. CCTV systems that consist of Analog devices are considered Analog Systems.

## Angle of View

Regarding CCTV security cameras, this term refers to the angular range in degrees that you can focus the camera without distorting the image. When focus is distant, the Angle of View is smaller or narrower. When focusing up close, you can generally see a wide Angle of View. The table below gives an approximate value for the angle of the field of view for lenses of various focal lengths. 30° is considered to be a normal view; telephoto (longer) lenses have lower angles. Most CCTV cameras have one of the 3 sizes of imaging devices listed below, 1/4", 1/3" or 1/2". As you can see, this makes a big impact when choosing lenses.

Lens Size	Angle of View		
	1/4" CCD	1/3" CCD	1/2" CCD
2.8 mm	64°	80°	97°
4.0 mm	45°	60°	74°
6.0 mm	30°	38°	57°
8.0 mm	23°	30°	40°
12.0 mm	15°	20°	30°
16.0 mm	11°	15°	22°
50.0 mm	4°	5°	7°

## Annunciator

This is a signaling device, either visual or audio based. For example, wireless annunciators use infrared beams that trigger an audible signal when interrupted, and can be used for security or retail purposes.

## Aperture

The Aperture is the opening of a lens that controls the amount of light let into the camera. The size of the Aperture is controlled by the iris adjustment. By increasing the stop number less light is permitted to pass into the camera.

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In television optics, it is the effective diameter of the lens that controls the amount of light reaching the photoconductive or photo emitting image pickup sensor.

### **Aperture Correction**

Compensation for the loss in sharpness of detail because of the finite dimensions of the image elements or the dot-pitch of the monitor.

### **Aperture Scale**

The aperture scale is referred to as an F-number. Examples are F1, F1.4, F2, F2.8, F4, etc.

### **Armor Dome Camera**

Armor Dome refers to a hi-impact reinforced polycarbonate dome casing designed to resist vandalism on this brand of camera.

### **ARP (Address Resolution Protocol)**

ARP is a method determining a host's Ethernet address from its Internet address. The network receives the ARP request, and then names the IP address. Next, the machine at this address returns its physical address so the information can be sent to it. If supported by all hosts, Internet addresses can be independent of Ethernet addresses.

### **Aspect Ratio**

The ratio of width to height for the frame of the televised picture. 4:3 for standard systems, 5:4 for 1K x 1K, and 16:9 for HDTV.

### **Aspheric**

A type of lens in which the spherical surface has been slightly altered to reduce spherical aberration. This type of lens generally allows wide angle viewing with relatively low distortion.

### **Asynchronous Data**

Most common for of data, where data is passed without any clocks or timing information, uses start and stop bits for synchronization.

### **AT Commands**

A protocol between a modem and terminal equipment for autodialing and configuration of the modem.

### **Attenuation**

In general terms, a reduction in signal strength.

### **Auto Balance**

A system for detecting errors in color balance in white and black areas of the picture and automatically adjusting the white and black levels of both the red and blue signals as needed for correction.

### **Auto Electronic Shutter**

A CCTV camera feature that allows the camera to compensate for moderate light changes in indoor applications without the use of Auto Iris Lenses.

### **Auto Iris Control**

A lens which allows the Aperture to automatically open or close to maintain proper light levels on the faceplate of the camera pickup device.

### **Auto Light Range**

The range of light, e.g., sunlight to moonlight, over which a TV camera is capable of automatically operating at specified output.

### **Auto White Balance**

A feature on color cameras that constantly monitors the light and adjusts its color to maintain white areas.

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### **Automatic Brightness Control**

In display devices, the self-acting mechanism which controls brightness of the device as a function of ambient light.

### **Automatic Frequency**

An arrangement whereby the frequency of an oscillator is automatically maintained within specified limits.

### **Automatic Gain Control**

A process by which gain is automatically adjusted as a function of input or other specified parameter.

### **Automatic Iris Lens**

A lens that automatically adjusts the amount of light reaching the imager.

### **Automatic Light Control**

The process by which the illumination incident upon the face of a pickup device is automatically adjusted as a function of scene brightness.

### **Automatic Terminating (Auto-terminating)**

Video signals are normally transmitted along co-axial cable, which require a terminating resistor at either end. If the signal is looped through a piece of equipment that has an input and an output, then it should be terminated if it is the final piece of equipment, but not terminated if it is in between other equipment. Some appliances have a manual switch for this setting, other equipment automatically detects if termination is required and applies the additional resistor as necessary.

### **AUX**

Auxiliary

### **AVC (Advanced Video Coding)**

Both the ITU and MPEG groups have agreed upon AVC as the current video compression standard. ITU calls it H.264, the MPEG group refers to it as MPEG-4, and the public calls it AVC.

### **AVI**

Audio Video Interleave - An audio-video standard designed by Microsoft.

### **AWG**

American Wire Gauge is the measurement of the metal part of the wire diameter. The AWG number is inversely related to size, meaning as the number gets larger the size gets smaller and visa-versa.

### **Back Porch**

That portion of the composite picture signal which lies between the trailing edge of the horizontal sync pulse and the trailing edge of the corresponding blanking pulse.

### **Back Focus**

A mechanical adjustment in a camera that moves the imaging device relative to the lens to compensate for different back focal lengths of lenses. This is important when a zoom lens is fitted.

### **Backlash**

Backlash (measured in degrees) is when a camera's Pan Tilt head cannot stop instantaneously, and is usually caused by excessive looseness in gears, pulleys, or other parts. Pre set PTZ surveillance cameras are rendered ineffectual by Backlash.

### **Balanced Signal**

A video signal is converted to a balanced signal to enable it to be transmitted along a twisted pair cable. Used in situations where the cabling distance is too great.

### **Balun**

This stands for Balanced – Unbalanced. Physically, a Balun is a small transformer used to convert audio, video, or

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VGA signals from balanced to unbalanced, and vice versa. Its practical use is in creating required impedance adjustments for signal transmission between differing wiring systems (like UTP to coaxial cable).

### **Bandwidth**

The number of cycles per second (Hertz) expressing the difference between the lower and upper limiting frequencies of a frequency band; also, the width of a band of frequencies.

### **Bar Test Pattern**

Special test pattern for adjusting color TV receivers or color encoders. The upper portion consists of vertical bars of saturated colors and white. The lower horizontal bars have black and white areas and I and Q signals.

### **Baud**

The speed of which data is transmitted, i.e.; 1 baud = 1 Bit per second.

### **Biometrics**

Biometrics is the technology and science of authenticating individuals by measuring their physiological or behavioral features. In the field of security, they are technologies ('readers') used to analyze fingerprints, voice patterns, irises or retinas, etc.

### **Bit**

A binary digit, the smallest element of information in a binary system.

### **BLC**

Backlight Compensation - The ability of a camera to compensate in cases where a subject with a large amount of background light would otherwise be obscured by blooming or silhouetting.

### **Black Level**

A measure of picture signal level, that matches to a specified maximum limit for black peaks.

### **Blanking Period**

The period of the composite video signal at black level (0.3V) and below when the retrace occurs.

### **Blooming**

The defocusing of regions of the picture where the brightness is at an excessive level, due to enlargement of spot size and halation of the fluorescent screen of the cathode-ray picture tube. In a camera, sensor element saturation and excess which causes widening of the spatial representation of a spot light source.

### **BNC connector**

These are a type of RF connectors that interconnect two coaxial cables or connect a cable with CCTV components. They're used in Ethernet networks, video connections, network cards, and cable interconnections.

### **Bounce**

Sudden variations in picture presentation (brightness, size, etc.,) independent of scene illumination.

### **bps (Bits Per Second)**

This unit is used to measure the speed data is moved between sources. For example, a 56kbps modem can move 56,000 bits per second.

### **Bridging**

When a high impedance video line is paralleled to a video source, this is known as bridging.

### **Brightness**

The attribute of visual perception in accordance with which an area appear to emit more or less light. (Luminance is the recommended name for the photo-electric quantity which has also been called brightness.)

### **Broadband**

In television system use, a device having a band pass greater than the band of a single VHF television channel.

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### **Bullet Camera**

A type of camera with a bullet like shape. Can be used inside or out. Some come with infrared lighting.

### **Burned-In-Image**

Also called burn. An image which persists in a fixed position in the output signal of a camera tube after the camera has been turned to a different scene or, on a monitor screen.

### **Bus Network**

This is a network type where a transmission medium served as a bus between all attached terminals, and it's the easiest and cheapest way to connect multiple clients. Computer motherboards and Ethernet networks both employ bus architecture.

### **Byte**

A unit of eight bits is known as a Byte

### **Cable tray**

This tray is installed in many sites, and lays cables out lengthwise for economics and organization.

### **CAD**

Computer Aided Design.

### **Cameo**

A small part of a monitor's viewing area (1/16<sup>th</sup> the screen area) is called a cameo. Multiplexers create multiple analog signals from security cameras and then combine them into multiple cameos on the screen, which enables simultaneous viewing of up to sixteen different camera pictures.

### **Candela**

A candela is a measurement of luminous intensity and is a replacement to the candle.

### **CAT5**

Category 5 (cable) - type of cable most often used in networking applications.

### **CCD**

See Charge Coupled Device

### **C Mount**

A television camera lens mount of the 16 mm format, 1 inch in diameter with 32 threads per inch. C-Mount or Standard Body cameras are designed to accommodate custom lenses. The lenses can be removed and replaced. Standard Body Cameras are the basic model and offer the most diverse range of features.

### **CCTV**

Common abbreviation for Closed-Circuit Television.

### **Charge-Coupled Device**

CCD. For imaging devices, a self-scanning semiconductor array that utilizes MOS technology, surface storage, and information transfer by shift register techniques.

### **Chroma**

That quality of color which embraces both hue and saturation. White, black, and grays have no chroma.

### **Chroma Burst**

A reference signal (4.43Mhz) included in the video signal after the horizontal synchronization line pulse. **Chroma**

### **Control**

A control of color television receiver that regulates the saturation (vividness) of colors in a color picture.

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### **Chroma Detector**

Detects the absence of chrominance information in a color encoder input. The chroma detector automatically deletes the color burst from the color encoder output when the absence of chrominance is detected.

### **Chromatic Aberration**

An optical defect of a lens which causes different colors or wave lengths of light to be focused at different distances from the lens. It is seen as color fringes or halos along edges and around every point in the image.

### **Chromaticity**

The color quality of light which is defined by the wavelength (hue) and saturation. Chromaticity defines all the qualities of color except its brightness.

### **Chrominance**

A color term defining the hue and saturation of a color. Does not refer to brightness.

### **Chrominance Signal**

That portion of the NTSC color television signal which contains the color information.

### **CIF (Common Intermediate Format)**

The default frame resolution of 352x288 for DVR systems is known as the CIF.

### **Cladding**

In Fibre Optics the outermost region of an optical cable, less dense than the centre core, acts as an optical barrier to prevent transmitted light leaking away from the core.

### **Clamp**

A device which functions during the horizontal blanking or synchronizing interval to fix the level of the picture signal at some predetermined reference level at the beginning of each scanning line.

### **Clamping**

The process that established a fixed level for the picture level at the beginning of each scanning line.

### **Clipping**

The shearing off of the peaks of a signal. For a picture signal. This effects the positive (white).

### **Clock**

A name commonly used for any of the sources of timing signals used in synchronous data transmission.

### **CMOS**

Complementary metal-oxide-semiconductor -A major class of integrated circuit technology used for a wide variety of analog circuits such as image sensors, data converters, and highly integrated transceivers for many types of communication.

### **Coaxial Cable**

A particular type of cable capable of passing a wide range of frequencies with very low signal loss. Such a cable in its simplest form, consists of a hollow metallic shield with a single wire accurately placed along the center of the shield and isolated from the shield.

### **CODEC**

CODEC means compressor/decompressor and is any technology used to compress and decompress data. It converts analogue input into digital, and then converts it back to analogue. CODECS can be either software applications or hardware components, or both. Ip Cameras, DVRs and HVR's use CODECS to compress video streams from security cameras, and then store this compressed data on a hard disk.

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### **Color Burst**

That portion of the composite color signal, comprising a few cycles of a sine wave of chrominance sub carrier frequency, which is used to establish a reference for demodulating the chrominance signal. Normally approximately 9 cycles of 3.579545 MHz.

### **Color Edging**

Extraneous colors appearing at the edges of colored objects, and differing from the true colors in the object.

### **Color Encoder**

A device which produces an NTSC color signal from separate R, G, and B video inputs.

### **Color Fringing**

Spurious colors introduced into the picture by the change in position of the televised object from field to field.

### **Color Purity**

The degree to which a color is free of white or any other color. In reference to the operation of a tri-color picture tube it refers to the production of pure red, green or blue illumination of the phosphor dot face plate.

### **Color Saturation**

The degree to which a color is free of white light.

### **Color Sync Signal**

A signal used to establish and to maintain the same color relationships that are transmitted.

### **Color Transmission**

The transmission of a signal which represents both the brightness values and the color values in a picture.

### **Comet Tails**

A condition that appears on a VDU that is caused by near burn combined with image movement.

### **Composite Sync**

A signal containing line and field pulse, but has no video information.

### **Composite Video Signal**

The combined picture signal, including vertical and horizontal blanking and synchronizing signals.

### **Compressed Picture**

A compressed picture is a full size picture that has been reduced in size while still displaying all of the original screen information.

### **Compression**

The reduction in gain at one level of a picture signal with respect to the gain at another level of the same signal. Compression is the act of taking an incoming signal or image, which can be analog or digital, and restructuring the data such that it takes fewer resources for storage and transmission.

### **Concave**

A concave optical lens has an inward curving surface, causing incoming light to diverge.

### **Conditional Refresh**

A technique by some video transmission systems, once the first image has been constructed only part of the image that changes is subsequently transmitted, allowing high speed updates when little movement is seen, however the speed of image update decreases.

### **Conductor**

Material with the ability to carry electric current. The term is also used for an electric wire.

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### **Contrast**

The range of light to dark values in a picture or the ratio between the maximum and minimum brightness values.

### **Contrast Range**

The ratio between the whitest and blackest portions of television image.

### **Convergence**

The crossover of the three electron beams of a three-gun tri-color picture tube. This normally occurs at the plane of the aperture mask.

### **Convex**

A convex lens curves outwards, and is sometimes known as converging. Light that passes through converges to a focal point.

### **Covert**

A covert application refers to a situation where you don't want the person to know that they are being watched or recorded. Also known as 'hidden' cameras.

### **Crosstalk**

An undesired signal from a different channel interfering with the desired signal.

### **Cross Talk**

Electrical interference caused by electromagnetic or electrostatic coupling by nearby conductors or external sources. Interference between two or more signals in close proximity within a band pass.

### **CRT (Cathode Ray Tube)**

The CRT is a tube found in most televisions, monitors, and video monitors. Once heated, it creates images by emitting a beam of electrons that hit a phosphor-coated surface. The glow of the surface is dependent on the beam's intensity. Each CRT uses deflection circuitry to control the beam's movement.

### **CS-mount**

A new generation of lenses designed for 2/3 inch, 1/2 inch, and 1/3 inch cameras incorporating CS-mounts. The distance from the flange surface to the focal point is 12.5mm. CS-mount lenses cannot be used on cameras with C-mount configuration. These lenses are smaller and less expensive than the C-mount equivalents.

### **D1**

D1 is a resolution of 720x486 (NTSC) or 720x576 (PAL), and was one of Sony's first digitized videotape formats.

### **Dark Current**

The thermally induced current that exist in a photo diode in the absence of incident optical power.

### **DAT**

Digital Audio Tape - a technology for sharing massive amounts of digital information in a small package. Used for archiving digital recorded images.

### **Data Protection**

The correlation between the gathering and distribution of data, technology, the public expectation of privacy, and the legal issues involved."

### **Day / Night Camera**

Not to be confused with Infrared Cameras, "Day/Night Cameras" are regular cameras with a highly sensitive CCD chip with the ability to capture quality imagery with very little light present.

### **dB (Decibel)**

Basically, a measure of the power ratio of two signals. In system use, a measure of the voltage ratio of two signals, provided they are measured across a common impedance.

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### **DC (Direct Current)**

DC differs from AC (alternating current) in that electricity always flows through it in the same direction. A pair of wires has one positive wire and one negative. Many security cameras are 12 Volt DC, although some can operate at different voltages.

### **DD (Direct Drive)**

This uses a gearless drive mechanism, making it less prone to mechanical failure. PTZ security cameras will often use them for pan, tilt, and zooming.

### **Decoder**

The circuitry in a color TV receiver which transforms the detected color signals into a form suitable to operate the color tube.

### **Decompression**

Taking digitally compressed DVST information and restoring this to normal video images.

### **Default Gateway**

In order to send data or video between networks, the IP Address of the Router is required. This address is known as the Default Gateway.

### **Definition**

The fidelity of a television system to the original scene.

### **De-multiplexing**

This refers to the procedure of separating different channels of video, audio, or data that were multiplexed at the source.

### **Depth of Field**

The in-focus range of a lens or optical system. It is measured from the distance behind an object to the distance in front of the object when the viewing lens shows the object to be in focus.

### **Depth of Focus**

The range of sensor-to-lens distance for which the image formed by the lens is clearly focused.

### **DHCP (Dynamic Host Configuration Protocol)**

A DHCP refers to the protocol used by a host computer to obtain an IP address so that it can communicate with other host computers. These addresses are usually dynamic, meaning they change periodically, so a connection cannot be obtained (or maintained) over the open Internet. Use of both static IP addresses and dynamic DNS helps establish a consistent connection.

### **Digital**

Two main methods exist for representing data in electronics, Analog and Digital. Digital information is communicated by designating a circuit on or off.

### **Digital Signal Processing**

An algorithm within the camera that digitizes data (the image). Examples include automatic compensate for backlight interference, color balance variations and corrections related to aging of electrical components or lighting. Functions such as electronic pan and zoom, image annotation, compression of the video for network transmission, feature extraction and motion compensation can be easily and inexpensively added to the camera feature set.

### **Digital System**

Digital CCTV security camera systems are only lately gaining popularity. Most security cameras are still analog, though DVRs are becoming the industry standard. There are some digital cameras available but they are extremely expensive. Most new systems installed today will include analog security cameras and a DVR. Any CCTV security camera system that includes a DVR is considered a Digital System.

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### Digital Versatile Disk (DVD)

Sometimes called digital video disk. This is an optical disk the same size as a CD, used for storing data of various formats. Including video, audio and computer data.

### Direct Drive (DD)

Some auto iris lenses require a DC signal from the camera. These are known as direct drive lenses. **Distortion**  
The deviation of the received signal waveform from that of the original transmitted waveform.

### Distribution Amplifier

A device that provides several isolated outputs from one looping or bridging input, and has a sufficiently high input impedance and input-to-output isolation to prevent loading of the input source.

### DivX

DivX Networks created DivX, a MPEG-4 digital video technology. Among its benefits is compression technology, which allows DivX equipped network cameras to store a month of video on a 20 gigabyte hard drive.

### DNS

Dynamic Name Service is simply a database of IP addresses and Domain Names. This database is responsible for telling the internet how to route a request based only on a name and not an IP address.

### Dome Camera

A type of camera with a dome-like shape. Most often used indoors. Some feature infrared lighting and some are designed to be tamper-proof, such as the Armor Dome Camera.

### Door Status Switch

A DSS is a switch used to monitor whether a door is in an opened or closed position.

### Dropout

The loss of video signal from a magnetic tape playback head or worn or damaged tapes.

### DSL (Digital Subscriber Line)

DSL is a digital telecommunications protocol that allows existing copper phone lines to be used for high-speed transfer of data between home and business end-users. xDSL refers to the various types of Digital Subscriber Lines which include: ADSL (Asymmetric DSL), SDSL (Single-line DSL), HDSL (High-data-rate DSL) and VDSL (Very-high-data-rate DSL). In theory, ADSL (the most common of these types), allows for download speeds of up to 9 Mbps and upload speeds of up to 640 Kbps. In reality, commercial performance is normally up to 1.544 Mbps download and 128 Kbps upload.

### DSP (Digital Signal Processing)

These chips can compress video independent of the CPU, which avoids the need to draw processing power from the CPU, allowing it to focus on other applications and computing tasks.

### DTMF (Dual Tone Multi-Frequency)

The scientific term for the Touch Tone signal used on telephones, it is the existing standard for the use of twisted wire pairs to send signals. Some PTZ cameras use DTMF signals in the transferring of telemetry information to the camera. This allows users to move the camera by dialing the number for that camera and then pressing buttons on their phone.

### Duplex

A duplex grants the ability to transfer data in and out of the recorder at the same time. In example, a full duplex DVR can continue capturing and recording images even while a different image is being displayed.

### Duplex DVR

A duplex DVR is a DVR that can record and view/playback at the same time. Compare to a *triplex* DVR or a *pentaplex* DVR.

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### **DVR**

Digital Video Recorder - A Digital Video Recorder, when applying to an CCTV security camera application, is a computer that converts the incoming (analog) signal from cameras to digital, and compresses and stores the data. The DVR replaces the function of a multiplexer and a security VCR.

### **DVST**

Digital Video Storage & Transmission - name given to equipment that can compress pictures to a fraction of their former size for transmission over communication networks or for digital storage.

### **Dwell Time**

The time a multiplexer or DVR stays on an individual camera before moving onto the next one in the sequence is known as dwell time.

### **Dynamic IP address**

This is the rotation of IP addresses such that every time a user logs onto the Internet, their IP address changes. This is done for Internet security purposes, either by the user or by their ISP. This process can interfere with the use of networked devices such as Network IP Cameras because they normally require a static IP address to function properly.

### **Dynamic Range**

The difference between the maximum acceptable signal level and the minimum acceptable signal level.

### **EI (Electronic Iris)**

Certain CCD security cameras utilize an electronic iris to electronically mimic a traditional auto iris. One drawback of an EI is that excessive light damages it over the long term.

### **Electronic Shuttering**

This term applies to video cameras that compensate for moderate indoor changes in light without use of auto iris lenses.

### **E-mail notification**

This is a feature of certain motion detecting Network IP Cameras. When activity is detected, they can email authorized users images or video.

### **Embedded operating system**

Cameras with this can also operate as computers. With an OS like Linux installed, they can perform other tasks such as sending images to a web site via FTP, email notification, and being simultaneously accessible by multiple users.

### **EMI (Electro Magnetic Interference)**

If improperly shielded, most electronic equipment causes EMI. The FCC sets the standards for electronic equipment shielding.

### **Encode**

Seen in multiplexer terminology as the recording of images to tape.

### **Equalizer**

An electronic circuit that introduces compensation for frequency discriminative effects of elements within the television system, particularly long coaxial transmission systems.

### **Error Correction**

Method employed by modems to ensure that data is transmitted and received error free.

### **Ethernet**

Ethernet can send information either wirelessly (known as WiFi) or, more commonly, over wires. It runs at 10Mbps, and all terminals connect to a single common bus (sometimes called a highway). It serves as the IEEE (Institute of Electrical and Electronics Engineers) 802.3 standard, which ensures that networks adhere to a particular set of

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## SECURITY SYSTEMS

technical standards. A new type, known as Fast Ethernet, or 100Base-T, runs at 100Mbps, and the newest type, Gigabit Ethernet, runs at 1gigabit per second.

### **External Sync**

The ability of electronic equipment (normally seen in cameras) to accept a synchronization signal from an external source and synchronize its self to it.

### **Extruded aluminum**

This type of aluminum is used to construct housings for CCTV (closed circuit television) applications and provides the added benefits of increased strength, durability and resistance to harsher environmental conditions as compared to plastics.

### **Fast lens**

Having a larger iris (and smaller F-stop), a fast lens gathers and transmits increased light to a surveillance camera.

### **FCC (Federal Communications Commission)**

This United States commission regulates communications by setting rates, controlling broadcast licensing, and testing electronic equipment to RF (radio frequency) transmission and related standards.

### **Fence disturbance sensor**

The perimeter fence around a site may have one of these installed around it for intrusion detection. These sensors can be interfaced with a CCTV switcher so that specific cameras are activated in an area where the disturbance is detected.

### **FI (Fixed Iris)**

These widely used fixed focal length iris lenses are inexpensive and are found in smaller types of fixed CCTV security cameras, usually small case or dome cameras.

### **Fiber Optics**

Also called optical fibers or optical fiber bundles. An assemblage of transparent glass fibers all bundled together parallel to one another. The length of each fiber is much greater than its diameter. This bundle of fibers has the ability to transmit a picture from one of its surfaces to the other around curves and into otherwise inaccessible places with an extremely low loss of definition and light, by a process of total reflection.

### **Field**

One of the two equal but vertically separated parts into which a television frame is divided in an interlaced system of scanning. A period of 1/60 second separates each field start time.

### **Field of View**

The maximum angle of view that can be seen through a lens or optical instrument. . A field of view calculator is used to determine the field of view with various distances and lens settings.

### **Firewall**

A firewall is a software or hardware application installed on a home or office computer that is intended to prevent unauthorized users from accessing that computer. With hacking and network intrusions on the rise, they are becoming essential in protecting private information. Four popular types of firewall are packet filtering, application gateways, circuit-level gateways, and proxy servers. Although they can be difficult to configure correctly, they are a critical component to protect unauthorized access and hacking of IP based surveillance systems that are LAN based.

### **Flange back**

This refers to the distance from lens flange (the beginning of the lens mount) to the focal plane. The flange back measurement for C-mount lenses is 17.52mm, while CS-mount is 12.5mm.

### **FM**

Frequency Modulation.

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### f-number

This is used to indicate image brightness as formed by the lens and controlled by the iris. The smaller the f-number, the brighter the image is.

### Focal Length

Of a lens, the distance from the focal point to the principal point of the lens. Focal Length tells you the strength of the lens. The longer the Focal Length the narrower Angle of View, the shorter the Focal Length the wider the Angle of View. The distance between the centre of a lens, or its secondary principal point and the imaging sensor. Lower lengths give a greater field of view and less magnification. Longer lengths give a narrower field of view and greater magnification. The table below gives an approximate value for the angle of the field of view for lenses of various focal lengths. 30° is considered to be a normal view, telephoto (longer) lenses have lower angles. Most CCTV cameras have one of the 3 sizes of imaging devices listed below, 1/4", 1/3" or 1/2". As you can see, this makes a big impact when choosing lenses.

Focal Length	Imaging Device Size		
	1/4"	1/3"	1/2"
2.8 mm	64°	80°	97°
4.0 mm	45°	60°	74°
6.0 mm	30°	38°	57°
8.0 mm	23°	30°	40°
12.0 mm	15°	20°	30°
16.0 mm	11°	15°	22°
50.0 mm	4°	5°	7°

### Focal Plane

A plane (through the focal point) at right angles to the principal point of the lens.

### Focal Point

The point at which a lens or mirror will focus parallel incident radiation.

### Footcandle

See lumen/ft 2.

### Footlambert (FL)

A unit of luminance equal to 1/candela per square foot or to the uniform luminance at a perfectly diffusing surface emitting or reflecting light at the rate of one lumen per square foot. A lumen per square foot is a unit of incident light and a footlambert is a unit of emitted or reflected light. For a perfectly reflecting and perfectly diffusing surface, the number of lumens per square foot is equal to the number of footlamberts.

### FPS

Frames Per Second - in digital video applications, refers to the number of video images that can be captured, displayed, or recorded in a second. Also referred to as the 'frame rate' or 'refresh rate'.

### Frame

The total area, occupied by the television picture, which is scanned while the picture signal is not blanked.

### Frame Frequency

The number of times per second that the frame is scanned. The U.S. standard is 30 frames per second.

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### **Frame store**

An electronic method of capturing and storing a single frame of video. All slow scan transmitters include a frame store that holds the picture at the moment of alarm, while the control is being dialed up. When the link is confirmed, the picture is transmitted.

### **Frame Transfer**

A CCD imager where an entire matrix of pixels is read into storage before being output from the camera. Differs from Interline Transfer where lines of pixels are output

### **Frequency Interlace**

The method by which color and black and white sideband signals are interwoven within the same channel bandwidth.

### **Frequency Response**

The range of band of frequencies to which a unit of electronic equipment will offer essentially the same characteristics.

### **Front Porch**

The portion of a composite picture signal which lies between the leading edge of the horizontal blanking pulse and the leading edge of the corresponding sync pulse.

### **f/Stop**

Also called F Number and F System. Refers to the speed or ability of a lens to pass light. It is calculated by dividing the focal length of the lens by its diameter.

### **FSK**

Frequency Shifted Keying - a form signaling employed by coaxial born telemetry equipment.

### **FTP (File Transfer Protocol)**

FTP is a client/server protocol used for the exchange of data between computers. Network cameras with an embedded operating system use FTP to send camera images to an authorized user's computer or web site.

### **Full Picture Update**

Used to describe video transmission products that send the total image on each update.

### **Gain**

An increase in voltage or power, usually expressed in dB.

### **Gamma**

A numerical value, or the degree of contrast in a television picture, which is the exponent of that power law which is used to approximate the curve of output magnitude versus input magnitude over the region of interest.

### **Gamma Correction**

To provide for a linear transfer characteristic from input to output device.

### **Genlock**

A device used to lock the frequency of an internal sync generator to an external source.

### **Ghost**

A spurious image resulting from an echo. Also known as ghosting, this is when an image moved across a computer screen leaves a brief lingering shadow of itself where it had just been, creating a kind of smear or blur. Lower quality computer screens often leave ghosts. Technically, the secondary visual signal has been created and received either earlier or later than the primary signal itself.

### **GHZ**

Gigahertz

### **GIGA**

Order of magnitude 10<sup>9</sup>

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### **GIP**

Graded Index File - a measurement shown in the form of a diagram which illustrates how the quality of glass in fibre optics, alters gradually from the densest at the core to the optically less dense cladding.

### **GLT**

Ground Loop Transformer - an isolation transformer with no direct contact between input and output.

### **Gray Scale**

Variations in value from white, through shades of gray, to black on a television screen. The gradations approximate the tonal values of the original image picked up by the TV camera.

### **Ground Loop**

This type of picture interference is caused when the ends of a video cable have differing ground potential, causing an AC current. This is either a black shadow bar onscreen or a tearing in the top corner of the picture results. The use of ground loop insulators prevents this problem.

### **GUI (Graphical User Interface)**

Pronounced 'goeey', this is the interface between the computer and the matrix switcher. Active areas of the computer screen are programmable, feature menus, icons, are clickable, and able to activate devices such as VCRs and matrix switchers. Essentially, the GUI makes the CCTV system easier to use.

### **Hardware Compression**

Video data compression taken place in specialized purpose built microchips.

### **Hardwired**

Direct connection between one product and another, used for control equipment in simple systems.

### **Hertz**

A Hertz (Hz) is the unit used to measure frequency, with 1 Hz equal to 1 cycle per second.

### **Horizontal resolution**

This measures the maximum amount of individual picture elements recognizable in a single scanning line.

### **Housing**

Covering or container featured on some cameras designed to protect from it from the weather.

### **HTML (HyperText Markup Language)**

HTML is the language used in the creation of WWW pages, with use of hyperlinks and markup for text formatting.

### **HTTP (HyperText Transfer Protocol)**

This is the protocol utilized to transmit and request information from WWW servers to browsers, either online or over networks.

### **Hub**

Networks rely on devices called hubs to connect multiple computers together into a LAN. Standard hubs share the bandwidth across all ports (so an eight port 100 Mps hub allocates this 100 Mps among the eight ports), while switching hubs are able to give each individual port a dedicated bandwidth amount (so these same eight ports could conceivably each receive a full 100 Mps of bandwidth on a switching hub).

### **Hue**

Corresponds to colors such as red, blue, etcetera.

### **Hum**

Electrical disturbance at the power supply frequency or harmonics thereof.

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### **HVR**

Hybrid Video Recorder - A universal Digital Video Recorder that supports up to five (5) different CCTV Video streaming formats including Analogue CVBS / HD / TVI / CVS as well as from IP Cameras. These HVR's are used in customer CCTV environments where its not cost effective to replane older generations of CCTV Camera technologies.

### **Iframe**

An IFrame is a complete image frame (known as an Intra Frame) in MPEG encoding that is coded without reference to other pictures. Compression is achieved by reducing spatial redundancy in the image, but not temporal redundancy.

### **Image Intensifier**

A device coupled by fiber optics to a TV image pickup sensor to increase sensitivity. Can be single or multi stage.

### **Image Plane**

The plane at right angles to the optical axis at the image point.

### **Impedance (input or output)**

The input or output characteristic of a system component that determines the type of transmission cable to be used. The cable used must have the same characteristic impedance as the component. Expressed in ohms. Video distribution has standardized on 75-ohm coaxial and 124-ohm balanced cable.

### **Incident Light**

The light that falls directly on an object.

### **Index of refraction**

This ratio measures the angle of incidence to the angle of refraction of light, with a denser medium bending more light and having a higher index of refraction.

### **Infrared**

Infrared radiation is electromagnetic radiation of a wavelength longer than that of visible light, but shorter than that of radio waves. The name means "below red", red being the color of visible light with the longest wavelength.

### **Infrared Camera**

Infrared Security Cameras have special infrared lights installed around the outside of the camera lens. Through use of this special light the camera can capture a good picture even in total darkness.

### **Infrared detector**

This is an alarm that uses infrared light to detect nearby movement.

### **Infrared illuminator**

A light source working in the infrared frequency range is called an infrared illuminator.

### **Infrared radiation**

Invisible to the human eye, this electromagnetic radiation has a wavelength of greater than 750 nanometers.

### **IR Cutoff Filter**

A filter inside the camera that moves behind the lens when it gets dark. A camera with an IR Cut Filter will produce very high quality images in low light conditions.

### **Injection molded plastic**

Smoked or tinted plastic (but still translucent) is melted into a liquid from pellets and injected into a "dome-shaped" mold to construct security camera dome housings.

### **Insertion Loss**

The signal strength loss when a piece of equipment is inserted into a line.

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# SECURITY SYSTEMS

## Interlacing

PAL video signals transmit odd and even lines alternately. This is a 2:1 interlace. The two sets of lines are combined to form each single frame.

## Interference

Extraneous energy which tends to interfere with the reception of the desired signals.

## Interleaving

Some alarms and security systems use the process of interleaving to add extra frames from alarmed cameras to a time multiplexed sequence while the alarm is activated. This prioritizes the view from alarmed cameras in the sequence of camera views.

## Interline Transfer

A technology of CCD design, where rows of pixels are output from the camera. The sensor's active pixel area and storage register are both contained within the active image area. This differs from "frame transfer" cameras that move all active pixels to a storage register outside of the active area.

## Interlaced Scanning

A scanning process for reducing image flicker in which the distance from center to center of successively scanned lines is two or more times the nominal line width, and in which the adjacent lines belong to different fields.

## Internal sync

The internal generation of sync pulses in a camera using a crystal controlled oscillator. This is needed on non-mains powered cameras.

## IP

Internet Protocol Address is a unique address given to certain computer or electronic devices. An IP address is necessary for devices to identify and communicate with each other. An IP address is required for positive unique identification of any device on a network or the internet.

## IP address

This is a numeric address that is then translated into a domain name by the DNS (domain name server). When we type in a website's name, the computer translates this into its IP address, which is a unique 32-bit number. The TCP/IP protocol then uses it for routing the data packets to their destinations. Each host has a unique IP address.

## IP Camera (or Network Camera)

This signal from an IP camera is delivered over an IP network. The camera digitizes the images, compresses them, and then sends them over the network (if this sounds similar to a webcam, that's because there is digital webcam technology contained within a network camera). But a typical IP network camera is much more advanced as compared to a consumer web camera which needs to be attached to a computer to operate. IP enabled security cameras usually offer a browser interface so that the user can operate and view the video remotely over the Internet. A DVR system is often comprised of an IP camera and a NVR.

## IP Waterproof Rating (IP66 - IP68)

IP ratings are a BSi standard measurement for how waterproof something is. Many cameras or camera housings are designed for outdoor use, and therefore need to be waterproof to some degree. The details of the tests are defined in BS EN 60529 : 1992. The IP number has two digits, and optional letters after them. These have the following meaning:

Code	Description
<b>First Digit</b> 0, 1, 2, 3, 4, 5, 6	Protection against ingress of foreign objects: <ul style="list-style-type: none"> <li>0 means non-protected</li> <li>6 means dust tight and protects against access</li> </ul>

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	with a wire.
<b>Second Digit</b> 0, 1, 2, 3, 4, 5, 6, 7, 8	Protection against ingress of water: <ul style="list-style-type: none"><li>• 0 means non-protected</li><li>• 8 means protects against continuous immersion in water.</li></ul>
<b>First Additional Letter</b> A, B, C, D	<ul style="list-style-type: none"><li>• A means protects against access with back of hand.</li><li>• B means protects against access with finger.</li><li>• C means protects against access with tool.</li><li>• D means protects against access with wire.</li></ul>
<b>Supplementary Letters</b> H, M, S, W	See BS EN 60529

### Iris

An adjustable aperture built into a camera lens to permit control of the amount of light passing through the lens.

### ISDN (Integrated Services Digital Network)

ISDNs are digital telecommunications lines that transmit voice and digital network services. Many telephone companies provide them, due to their superior reliability and speed (up to 128K) over analog modems. The ISDN standard improves compatibility for the integrated digital transmission of voice, video, and data over normal copper telephone wires, which allows for better quality and speeds. There are two primary types of ISDN: BRI (Basic Rate Interface) and PRI (Primary Rate Interface). PRI is faster, with speeds on par with T-1 circuits.

### Isolation Amplifier

An amplifier with input circuitry and output circuitry designed to eliminate the effects of changes made at either upon the other.

### ISIT

Intensified Silicon Intensified Target - Usually used for extreme low light CCTV cameras or X-ray machines.

### ISO

International Standards Organization

### ITU (International Telecommunications Union)

Currently, 113 countries participate in the ITU, which is an agency of the United Nations. Existent since 1865, the ITU is responsible for developing international telecommunications for networked telecommunications. The ITU-R is a subchapter, and is responsible for managing radio frequency spectrum (including television and video) standards.

### Jitter

Small, rapid variations in a waveform due to mechanical disturbances or to changes in the characteristic of components. Supply voltages, imperfect synchronizing signals, circuits, etc.

### Joystick

PTZ controllers utilize this stick as a control device for pan and tilt movement of a PTZ security camera's pan and tilt head.

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### **JPEG (or JPG)**

Pronounced "jay-peg" and stands for "Joint Photographic Experts Group" who designed the standard. This is a standard way of compressing images which works particularly well for photographic images (as opposed to graphic art).

### **Lag**

Image retention that occurs in a video image when rapid motion of the camera or viewed object leaves a trail.

### **LAN (Local Area Network)**

A LAN is a high-speed network connecting computers that are nearby (probably in the same building), and offers differing connection protocol options.

### **Laser**

A source of exceptionally pure light which can consist of a single wavelength concentrated into single beam, used to transmit IR lighting through fiber optic cable.

### **Latency**

The speed of a network is dependent on both latency and bandwidth, with latency referring to the time needed for an IP packet to travel from source to destination. Wide bandwidth and low latency are preferable.

### **Leased Line**

A telephone connection giving a permanent point to point link.

### **LED (Light Emitting Device)**

Monochrome surveillance cameras use LEDs to provide infrared light. An LED creates an infrared light frequency when stimulated by an electric charge.

### **Lens**

A transparent optical component consisting of one or more pieces of optical glass with surfaces so curved (usually Spherical), that they serve to converge or diverge the transmitted rays of an object, thus forming a real or virtual image of that object.

### **Lens Preset Positioning**

Follower Pots are installed on lens that allows feedback to the controller information relevant to zoom and focus positioning allowing the controller to quickly adjust to a preselected scene and arrive in focus at the proper focal length automatically.

### **Lens Speed**

Refers to the ability of a lens to transmit light, represented as the ratio of the focal length to the diameter of the lens. A fast lens would be rated  $<f/1.4$ ; a much slower lens might be designated as  $> f/8$ . The larger the  $f$  number, the slower the lens.

### **Level control**

Level control is control of the main iris, and sets the auto-iris circuit to a specific video level of the user's choice. The iris is therefore set to maintain this video level no matter what the light condition may be. A high level opens the iris; a low level closes it.

### **Light**

Electromagnetic radiation detectable by the eye, ranging in wavelength from about 400 to 750 nm.

### **Light sensor**

Often used to turn infrared illuminators on or off, this device is triggered when it detects a pre-set amount of light, and helps cope with low (or no) level light conditions.

### **Limit switch**

A security camera's pan and tilt head with one of these devices installed (either inside or outside it) is limited in the angles it can move.

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### **Line Amplifier**

An amplifier for audio or video signals that feeds a transmission line; also called program amplifier.

### **Line locked**

The sync pulses of cameras are locked to the AC mains frequency.

### **Line powered**

A camera in which the power is supplied along the same coaxial cable that carries the video signal.

### **Linux**

Linux is an open source UNIX implementation, and a popular alternative to the Windows operating system. It is often used in embedded operating systems found in advanced Network IP Cameras. Linux is freeware. **Loop frame store**  
The principle is that a series of video frames is compressed and stored in a continuous loop. This records a certain number of frames and then records over them again and again until an alarm signal is received. When this happens, it carries on recording for a dozen frames or so and then stops. This means that frames before and after the incident are recorded. This eliminates the boring searching through hours of video tape and concentrates on the period of activity.

### **Liquid Crystal Display (LCD)**

This is a technology used for flat screen displays. Aside from being smaller and lighter, it also has the advantage of using less power than traditional cathode ray tube screens.

### **Lock Status Sensor (LSS)**

Relay type to operate the LED with an SPDT switch to indicate low voltage and tampering of the lock face locally or to a remote monitoring location.

### **Loop Through**

Also called looping. The method of feeding a series of high impedance circuits (such as multiple monitor/displays in parallel) from a pulse or video source with a coax transmission line in such a manner that the line is bridged (with minimum length stubs) and that the last unit properly terminates the line in its characteristic impedance. This minimizes discontinuities or reflections on the transmission line.

### **Loss**

A reduction in signal level or strength, usually expressed in dB. Power dissipation serving no useful purpose.

### **Loss Prevention**

Best summarized as 'not having anything stolen', loss prevention is the practice of securing devices or information from theft or loss. Video surveillance is a common practice in preventing theft or other losses of property like vandalism.

### **Low-Frequency Distortion**

Distortion effects which occur at low frequencies. In television, generally considered as any frequency below the 15.75-kHz line frequency.

### **Low Light**

Refers to very dim lighting, even 'normal' darkness. Complete darkness is 0 lux. Infrared cameras work well in very low light conditions.

### **Lumen (LM)**

The unit of luminous flux. It is equal to the flux through a unit solid angle (steradian) from a uniform point source of one candela or to the flux on a unit surface of which all points are at a unit distance from a uniform point source of one candela.

### **Lumen/FT<sup>2</sup>**

A unit of incident light. It is the illumination on a surface one square foot in area on which a flux of one lumen is uniformly distributed, or the illumination at a surface all points of which are at a distance of one foot from a uniform source of one candela.

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### Luminance

Luminous intensity (photometric brightness) of any surface in a given direction per unit of projected area of the surface as viewed from that direction, measured in footlamberts (fl).

### Luminance Signal

That portion of the NTSC color television signal which contains the luminance or brightness information.

### Lux

International System (SI) unit of illumination in which the meter is the unit of length. One lux equals one lumen per square meter.

This is a measure of the amount of light striking a surface. i.e. the luminous flux density at a surface. One lux is one lumen per square metre. Cameras for use in good lighting conditions, or in daylight would normally be rated at 2 Lux or more. Cameras with a Lux rating of 0.2 Lux or less would be considered low-light cameras. It is not possible to get good colour definition in low light levels, so in general low light cameras are always monochrome. However, day/night cameras use electronics to switch from colour during the daytime, to monochrome during night or low light conditions. Many low light cameras are also infra-red sensitive, so that infra-red illumination can be used. Particularly useful in zero light conditions.

Approximate Lux	Description of Situation
< 0.001	Starlight - overcast night
0.001 - 0.01	Starlight - clear night
0.01 - 0.1	Overcast Night
0.1 - 1	Moonlight
1 - 100	Dusk / Twilight
100 - 10,000	Overcast Day
10,000 - 1,000,000	Bright Sunlight

### Manual iris lens:

A lens with a manual adjustment to set the iris opening (F-stop) to a given position. Generally used for relatively constant lighting applications.

### Matrix Switcher

A combination or array of electromechanical or electronic switches which route a number of signal sources to one or more designations.

### MCL

Maximum camera length.

### MFD

Mode Field Diameter - Term used in fiber optics.

### MHZ

Megahertz

### Micro Camera

Very small cameras designed to work in covert applications where you don't want people to know that the camera is there. Also called 'hidden cameras'

### Microwave Transmission

Method of sending video signals and/or data over free space, longer distances than IR transmission.

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### **Mimic panel**

This panel displays a site's layout, including the location of surveillance cameras. When the panel is interfaced with a switcher, it can be used to switch any specific camera to the monitors.

### **Minimum scene illumination**

This information (found on a camera's data sheet) displays the minimum light level the particular camera needs in order to provide an acceptable monitor picture.

### **JPEG (Motion JPEG)**

Even though it's not as efficient as MPEG-4, the MJPEG is still an effective way of creating video from the sequencing of JPEG images. The video from store security cameras often uses this method when being formatted.

### **MMS (Microsoft Media Services)**

MMS is the first streaming protocol created for the Microsoft Windows Media Player.

### **MOD (Minimum Object Distance)**

This refers to the closest an object can be to the vertex of the lens and still be in focus. The wider the lens angle, the smaller the MOD.

### **MODE**

Path taken by light rays along fiber optic cable.

### **Modulation**

The process or results of the process, whereby some characteristic of one signal is varied in accordance with another signal. The modulated signal is called the carrier. The carrier may be modulated in three fundamental ways: by varying the amplitude, called amplitude modulation; by varying the frequency, called frequency modulation; by varying the phase, called phase modulation.

### **Monitor**

A unit of equipment that displays on the face of a picture tube the images detected and transmitted by a television camera.

### **Monochrome**

Black and white with all shades of gray.

### **Monochrome Signal**

In monochrome television, a signal wave for controlling the brightness values in the picture. In color television, that part of the signal wave which has major control of the brightness values of the picture, whether displayed in color or in monochrome.

### **Monochrome Transmission**

The transmission of a signal wave which represents the brightness values in the picture, but not the color (chrominance) values.

### **MOS**

Metal Oxide Semiconductor - A form of CCD imager used in CCD cameras.

### **Motion Detection**

A feature in some VCRs and DVRs to only begin recording video if something in the image moves or changes. Good for monitoring an area that is not heavily trafficked, and saves a lot of hard drive space.

### **Mounting Bracket**

Various different kinds of mounting brackets are used to install cameras to the wall or ceiling.

### **MPEG (or MPG)**

Pronounced "em-peg" and stands for "Motion Picture Experts Group" who designed the standard. This is a standard way of compressing audio and video files. (It's also the technology behind the now world-famous MP3 music files.)

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### **MPEG-4**

MPEG4 has a newer codec and supports 3D content, low bit rate encoding, and support for Digital Rights Management, which controls the use of copyrighted digital work. MPEG4 is used for web streaming media, broadcast television, videophones, and CD distribution. MPEG-4 is widely used in video surveillance, and has recently been improved to the AVC standard.

### **MTBF (Mean Time Between Failures)**

MTBF measures the average time that a device works properly without failure; unfortunately, it's usually measured in hours. An hour measurement does not translate well to the average consumer looking for life expectancy in years.

### **MTTR**

Mean Time To Repair - The average time it takes to fully repair a piece of equipment.

### **Multicast (or Multicasting)**

This term refers to the Internet protocol that allows a single IP address (the host) to send a packet to multiple destinations at once with a single, local transmit operation. It also is used in video streaming to enable the broadcasting of video to multiple recipients at once.

### **Multimode**

An optical fiber that supports more than one propagation mode.

### **Multiplexer**

A device that can accept a number of camera inputs and almost simultaneously display them on a single monitor and/or record them. Multiplexers can also be used to transmit multiple cameras over the same transmission medium.

### **MUX**

Multiplexer unit.

### **Network Camera**

Also known as a Network IP Camera, this is a stand-alone camera that uses a standard web-browser to view live, full motion video from a computer network, including over the Internet. They often feature an embedded OS (operating system) and features like: FTP of images, web server capability, and built-in motion detection.

### **Noise**

The word "noise" originated in audio practice and refers to random spurts of electrical energy or interference. In some cases, it will produce a "salt-and-pepper" pattern over the televised picture. Heavy noise is sometimes referred to as "snow".

### **Non-Composite Video**

A video signal containing all information except sync.

### **NTSC**

Abbreviation for National Television Systems Committee. A committee that worked with the FCC in formulating standards for the present day United States color television system.

### **NVR (Network Video Recorder)**

Functionally similar to a DVR, a NVR also accepts IP camera inputs. NVRs can be software based, making them suitable only for accepting IP camera streams over the Internet.

### **Ohms**

These are units that measure the impedance or resistance of an electrical device.

### **Optical Filters**

These filters selectively allow for different frequency light to pass through.

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## SECURITY SYSTEMS

### **Oscilloscope**

This troubleshooting device translates electrical signals into voltage versus time based waveforms that are displayed onscreen, allowing visual feedback when adjusting CCTV components.

### **Outdoor Camera**

Outdoor cameras come in special weatherproof housings that allow them to stand up well in tough weather and temperature conditions.

### **Outdoor Camera Housing**

A protective shell for security cameras to be placed in outdoor environmental conditions, these housings typically include cooling fans for summer use and heaters for winter use. The heaters also eliminate fogging of the glass anytime this occurs.

### **Outdoor Dome Housing**

This housing is dome shaped for insertion of dome security cameras, is very tamper resistant, and allows for PTZ.

### **Output**

The signal level at the output of an amplifier or other device.

### **PAL (Phase Alternating Line) /CCIR**

The video standards used throughout Europe. CCIR is the monochrome standard. PAL is the color standard which adds on top of the CCIR. The USA similar standards are NTSC and EIA. The European and American standards do not work together.

### **Pan and Tilt**

A device upon which a camera can be mounted that allows movement in both the azimuth (pan) and in the vertical plane (tilt).

### **Pan/Tilt Preset Positioning**

Followers pots are installed on pan/tilt unit to allow feedback to the controller and provides information relevant to horizontal and vertical positioning, allowing the controller to quickly adjust to a pre-selected scene automatically.

### **Pan-Tilt-Zoom (PTZ) Cameras**

PTZ cameras allow you to adjust the position ('pan' is side-to-side, 'tilt' is up-and-down) and focus ('zoom') of the camera using a remote controller. Due to this added functionality, these cameras tend to cost much more than non-PTZ cameras

### **Passive**

If a system component is non-powered, it is considered passive.

### **Patch Panel**

A panel where circuits are terminated and facilities provided for interconnecting between circuits by means of jacks and plugs.

### **PCM**

Pulse Coded Modulation

### **PCMCIA Card (Personal Computer Memory Card International Association)**

These storage devices resemble a credit card and are typically used to expand the hardware functionality of portable devices such as laptops. In video surveillance application, PCMCIA cards can be used with portable PCs to add real-time full motion video capture of live security video. When used with digital cameras, they provide portable storage and a method for saving and transferring photos between digital cameras and PCs.

### **Peak Pulse Amplitude**

The maximum absolute peak value of a pulse, excluding those portions considered to be unwanted, such as spikes.

### **Peak-to-Peak**

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The amplitude (voltage) difference between the most positive and the most negative excursions (peaks) of an electrical signal. A full video signal measures one volt peak to peak.

### **Peak White Inverter**

Circuitry that will convert white highlights over a pre-set threshold to black, useful for car registration recognition with headlights.

### **Pelco-D**

This Pelco created protocol is used to control PTZ security camera movement.

### **Pentaplex or Pentaplex DVR**

A pentaplex DVR is a DVR that can perform all the DVR functions at the same time: record, view/playback, network (view remotely), administrate and backup. For example, a machine that is *not* pentaplex would stop recording while the administration functions were being performed. Compare to a *duplex DVR* or a *triplex DVR*.

### **Photo Detector**

A device fitted to fiber optic link to convert light into electrical signals.

### **Photocell**

A device used to detect changes in light level to provide automatic operation of lights etc.

### **Photon**

A photon is the basic unit of light.

### **Picture Element**

See Pixel

### **Pigtail**

Short length of fiber optic cable attached to another component such as a source or coupler.

### **Pin-Hole Camera**

Pin-hole cameras have a very small lens that can see through a small hole. These types of cameras are used in covert applications. A disadvantage of pin-hole cameras is that they require more lighting than normal cameras to capture a good clear picture.

### **PIP**

Picture In Picture - device used to superimpose one video image over another.

### **PIR**

Passive Infrared. A motion detector that senses body heat to detect motion.

### **Pixel**

Short for Picture Element. A pixel is the smallest area of a television picture capable of being delineated by an electrical signal passed through the system of part thereof. The number of picture elements (pixels) in a complete picture, and their geometric characteristics of vertical height and horizontal width, provide information on the total amount of detail which the raster can display and on the sharpness of the detail, respectively.

### **Plug and Play Cable**

A cable that makes wiring cameras easy. Each camera needs to have a power wire and video wire (and sometimes an audio wire too), plus the connectors at the end of the wire to plug it in. The plug and play cables have all three wires built into one cable with the connectors already attached. The only disadvantage of plug and play cable is that the signal tends to degrade if run distances. For DVRs - plug and play cables can be run reliably up to 100 ft. For analog systems - plug and play cable can be run up to 400 ft. If you need to run longer distances then you need to use the RG59 or RG6 Siamese cable.

### **PoE**

Power Over Ethernet - an adaptor that allows you to transmit power to a security camera through CAT5 (aka Ethernet) cable.

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### **Post-record**

This is a DVR's ability to record after a motion detection event has occurred. It records for a specified amount of time after the event has been triggered, even though the motion may have ceased.

### **Potentiometer**

This device measures voltage or a potential voltage difference by comparing it with a standard voltage. It can also change resistance by moving the contact point, and is used to record pre-set positions in both zoom lenses and pan tilt heads.

### **Power Supply**

See: AC Adaptor - All CCTV devices require power of some sort. Electricity in the United States comes in one form, 110 to 120 AC. The AC adaptor converts the AC power to DC power and will adjust it to a specified amperage. Power supplies should come included with each item.

### **PPP (Point-to-Point Protocol)**

Point-to-point Protocol is the primary method used in establishing a direct connection between two devices on a network (usually a computer and the Internet). It is a communication protocol between computers using one of several methods: usually TCP/IP, telephone lines, or ISDN.

### **Pre-record**

Pre-record is a setting on DVR systems that applies to motion recording. Normally, when a DVR is set to record motion, it takes a second to begin recording once the motion has been triggered. With pre-record selected, a buffer of the previous 140 frames before motion was triggered is recorded to the drive, allowing the security camera to capture one or two seconds prior.

### **Pre-set controller**

A function contained within a telemetry system that, on receipt of a signal, causes a particular camera to pan, tilt, and zoom to a predetermined field of view. Most systems can accommodate up to sixteen preset positions for each camera. This is an especially useful feature on larger systems with alarmed areas.

### **Pressure mat**

Placed before doorways, gates, and other entrances, this device responds to pressure (usually being walked or stood upon) to either open doors or activate the surveillance camera trained on that area.

### **Primary Colors**

Three colors wherein no mixture of any two can produce the third. In color television these are the additive primary colors red, blue and green.

### **Progressive Scan**

The progressive scan format outputs data from the camera (the signal) in sequential order as it is scanned. The scan format produces a full frame of video in a continuous stream, rather than half the image per output sequence in traditional RS-170 CCD cameras. Standard RS-170 video is interlaced and output in two separate fields, generating essentially half the image at a time. With Cohu's new 6600 Series Progressive Scan Camera, a new, full image is output from the camera every 1/60th second, making it ideal for machines to more quickly process and display information, or act according to programmed instructions.

### **Protocol**

Protocols are standard procedures used for regulating data transmission between computers. Protocols exist to minimize errors during the exchange of data.

### **PSTN**

Public Switched Telephone Network - analogue communications network used for day to day telephone and data transmission.

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## SECURITY SYSTEMS

### **PTZ**

Pan-Tilt-Zoom - PTZ cameras allow you to adjust the position ('pan' is side-to-side, 'tilt' is up-and-down) and focus ('zoom') of the camera using a remote controller. Due to this added functionality, these cameras tend to cost much more than non-PTZ cameras

### **PTZ controller**

The controller used to control PTZ camera movement, usually software or a joystick.

### **QCIF**

This resolution is one quarter of CIF, with 144 lines and 176 pixels per line.

### **Quad**

An analog device used to display 4 cameras simultaneously on a single monitor.

### **Rack Mount**

Piece of equipment that can be housed into a rack enclosure, industry standard is 19 inches with the height measured in 'U' - 1U = 1.75

### **Range finder**

This is a device that determines the required focal length and the resulting monitor image. While looking through it, the user can adjust the range finder to get the optimal image, with numbers on the range finder displaying the needed focal length.

### **Raster**

A raster is a rectangular scan pattern of lines that the picture is created upon. It also refers to an active TV monitor that has no video information displayed.

### **RCA**

An electrical connector invented by Radio Corporation of America, from which its name is derived. Consists of 3 wires - red, yellow, and white, these are commonly used on a wide assortment of products in the audio/video market.

### **Real Media**

Real Networks developed an early multimedia protocol for video and audio (often streaming) called Real Media.

### **Real-Time Recording**

In digital video applications, 30 frames per second per camera (see above) looks just like real-time. There is no hesitation or jerkiness in the video.

### **Reed switch**

This type of alarm activating device becomes active when contact is either opened or closed, as in a door or window being opened or closed. They are also capable of switcher activation to activate the relevant security camera.

### **Reflectance**

Ratio to which is reflected of a given surface, normally shown as a percentage.

### **Reflected Light**

Scene illumination multiplied by reflectance, this is the light level available for the camera and determines picture quality.

### **Regenerators**

Units placed at regular intervals along a transmission system to detect weak signals and regenerate them.

### **Regulated power supply**

A DC power supply with a minimal ripple factor is considered to be regulated.

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### **Relay**

An electrically controlled device that opens and closes electrical contacts to effect the operation of other devices in the same or another electrical circuit.

### **Remote head surveillance camera**

For surveillance situations where space is limited, this type of camera separates the CCD chip from the camera body by cable, considerably shrinking the overall camera size.

### **Remote monitoring**

This allows an off site user to monitor surveillance camera feeds, so a user can survey a site regardless of their location from it. The transfer of data from camera to user can be either over the Internet or the Ethernet, with IP cameras being suited to the task.

### **Remote switcher**

A video switcher which is connected to the camera cables and which contains the switching electronics. This unit may be remotely located and connected to a desktop controller by a single cable for each monitor.

### **Remote Surveillance**

The ability to view your cameras from a remote location. Information is transmitted via phone line or internet.

### **Repeater**

A device that amplifies and then re-transmits a signal.

### **Resolution**

Refers to how much detail can be captured on a camera or displayed on a monitor. Cameras typically capture about 380 horizontal lines of resolution. High resolution cameras may capture 450 lines of resolution or more. The higher the resolution, the more detail that can be captured in a picture. The monitors and recording devices can generally handle at least as much resolution as the cameras can capture.

### **Resolution (horizontal)**

The amount of resolvable detail in the horizontal direction in a picture. It is usually expressed as the number of distinct vertical lines, alternately black and white, which can be seen in a distance equal to picture height.

### **Resolution, Limiting**

The details that can be distinguished on the television screen. Vertical resolution refers to the number of horizontal black and white lines that can be resolved in the picture height. Horizontal resolution refers to the black and white lines resolved in a dimension equal to the vertical height and may be limited by the video amplifier bandwidth.

### **Resolution (vertical)**

The amount of resolvable detail in the vertical direction in a picture. It is usually expressed as the number of distinct horizontal lines, alternately black and white, which can theoretically be seen in a picture.

### **Retained Image**

Also called image burn. A change produced in or on the target which remains for a large number of frames after the removal of a previously stationary light image and which yields a spurious electrical signal corresponding to that light image.

### **RF (Radio Frequency)**

A frequency at which coherent electromagnetic radiation of energy is useful for communication purposes. Also, the entire range of such frequencies.

### **RG-11**

Having a thick center core, this type of coaxial cable is used to transmit video signals of up to 550m.

### **RG-59**

More commonly used than RG-11 for CCTV, this coaxial cable transmits video signals of up to 230m.

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### **RGB (Red Green Blue)**

These are the three primary colors of light. All other colors are derived from their mixture.

### **RG59 Siamese Cable**

This type of cable combines the power wire with the video wire. You have to add your own connectors to each end of the cable. Use this type of cable when you need to run distances longer than 100 ft with a digital system, or more than 400 ft. with an analog system.

### **Ripple**

Amplitude variations in the output voltage of a power supply caused by insufficient filtering.

### **Rise Time**

The time required for the leading edge of a pulse to rise from 10% to 90% of its total amplitude.

### **ROI (Region of Interest)**

Applied to the field of video surveillance, ROI stands for Region of Interest, meaning an area of the frame where motion is detected, in turn activating the surveillance camera.

### **Roll**

A loss of vertical synchronization which causes the picture to move up or down on a receiver or monitor.

### **Router**

A router is a piece of equipment facilitating the exchange of packets throughout LAN or WAN networks. It moves packets across a predetermined path to their destination by storing and forwarding the packets, and then determining their optimal path along the network. A router is hardware based, but can also include software.

### **RS170**

Video Sync Pattern for the United States - 525 lines @ 60Hz.

### **RS232 (or RS-232)**

This is the communication standard that applies to PC serial communications. RS232 is commonly used as the mechanism for sending instructions that control PTZ security camera movement.

### **RS422**

Communications network

### **RS485**

Communications network

### **RTP (Real-time Transport Protocol)**

The Internet Engineering Task Force (IETF) developed RTPs to specify audio and video signal management. It standardizes the packet formatting for both for easy synchronization and Internet delivery. Streaming media systems and video conferencing systems use RTP, while DVR systems rely on this protocol in the implementation of the remote view feature. Since it doesn't specify how video surveillance playback is implemented, the data from different RTP based surveillance systems usually cannot interoperate.

### **RTSP (Real Time Streaming Protocol)**

This open standard for Internet streaming of audio and video is popular among DVR makers for remote viewing of live or stored security camera video over the Internet. RTSP controls the transmission of the data stream much the way a television remote controls the television. Like RTP, interoperability problems exist between different DVR systems.

### **SAD (Sum of Absolute Difference)**

This acronym refers to a mathematical technique used in motion detection.

### **Saturation**

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In color, the degree to which a color is diluted with white light or is pure. The vividness of a color, described by such terms as bright, deep, pastel, pale, etc. Saturation is directly related to the amplitude of the chrominance signal.

### Scanning

The process of moving the electron beam of a pickup tube or a picture tube across the target or screen area of a tube.

### Scene illumination

The density of light in LUX falling on the area to be viewed. For best results, the ratio of the lightest to the darkest areas should not be more than a factor of two.

### Sensitivity

In television, a factor expressing the incident illumination upon a specified scene required to produce a specified picture signal at the output terminals of a television camera.

### Serial Port

The computer input/output (I.O.) which is RS-232 based and allows communication in both directions between the computer and the other component

### Shield

A covering put between cables to prevent interference caused by signal leakage.

### Shutter

Ability to control the integration (of light) time to the sensor to less than 1/60 second; e.g: stop motion of moving traffic.

### Shutter speed

This is the speed which the CCD chip can read out the charge. Using either dipswitches or a surveillance camera's menu (if one has been built in), the default setting of 1/50 sec (PAL) or 1/60 sec (NTSC) can be increased up to 1/100,000.

### Signal-to-Noise Ratio

The ratio between useful television signal and disturbing noise or snow. This number represents how much signal noise the camera can tolerate and still provide a good picture. The higher the number the better.

$$\text{SNR} = \frac{P_{\text{signal}}}{P_{\text{noise}}} = \left( \frac{A_{\text{signal}}}{A_{\text{noise}}} \right)^2$$

### Simplex

A type of multiplexer that allows you to simultaneously record images to tape and display the live, full screen image of any individual security camera (compare this to the duplex type which can also display multiple-picture screen images while recording). A simplex multiplexer can display multiple-picture screen images, but it cannot record at the same time. Also unlike a duplex multiplexer, it is unable to record and playback recorded tapes simultaneously.

### SIT

Silicon Intensified Target - a CCD camera used in very low light conditions.

### SMS (Short Message Service)

Some of the more advanced Network cameras feature software that sends notifications via the Cellular network to authorized users after programmed events. Griffid is one example of SMS being implemented in network surveillance software.

### SMTP (Simple Mail Transfer Protocol)

This is the standard server-to-server protocol for the delivery of electronic mail, either via Internet or on other TCP/IP networks.

### Smart Search

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This is a feature of our digital video recorders that allows you to search for changes in a particular area of an image over time. For example, if a wallet was stolen off of a table, you could go to a point on the video where the wallet is there, draw a virtual box around that area, then search the video recording for changes to that particular area. This would allow you to locate the exact point on the video where the wallet was removed.

### **Snow**

Heavy random noise.

### **Spectral Response**

Sensitivity of an image device to different frequencies of light, visible light is 300 to 730nm IR (infra-red) is 715 - 850nm.

### **Speed Of Update**

The time taken to refresh a single picture.

### **Spike**

A transient of short duration, comprising part of a pulse, during which the amplitude considerably exceeds the average amplitude of the pulse.

### **Spot Cam**

Spot Cams are effective security cameras, useful for general surveillance needs. They are intended to be operable out of the box (mounting bracket often not included), and most have their own integrated varifocal lens. Be certain to choose a Spot Cam with its own auto iris feature and day/night capability.

### **Spot filter**

A supplement to the iris which allows very sensitive cameras to view bright scenes easily. The iris of a lens without a spot filter would not be able to close down enough in bright light without creating image degradation.

### **Standard Minimum Signal**

1000 microvolts at 75 ohms (0dB mV) in RF systems; 0.7-VPP non-composite, 1-VPP composite in video systems.

### **Static IP address**

This is an IP address that doesn't change. Any computer can connect to it, thereby making video surveillance systems with static IP addresses remotely accessible from any location on the Internet.

### **Strike**

A plate mortised into or mounted on the door jamb to accept and restrain bolt when the door is closed. In some metal installations of deadlock, the strike may simply be an opening into the jamb. (Synonym: **keeper**)

### **S-Video**

Representing an improvement in quality over composite video, S-Video separates chrominance and luminance onto two different signal wires, resulting in better picture quality.

### **Switch**

A switch will take multiple camera inputs and will show them on the monitor one at a time. Unlike a quad it will not display them all at once, instead it sequences through them showing one camera at a time. It will also allow you to select a particular camera to view.

### **Switcher**

A device that routes video and or audio signals to different sources.

### **Sync**

A contraction of "synchronous" or "synchronize".

### **Sync Generator**

A device for generating a synchronizing signal.

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### **Sync Level**

The level of the peaks of the synchronizing signal.

### **Sync Signal**

The signal employed for the synchronizing of scanning.

### **Synchronizing**

Maintaining two or more scanning processes in phase.

### **TA**

Terminal Adaptor - used to connect video transmission products to an ISDN digital telephone line.

### **TBC (Time Base Corrector)**

Multiplexers and quad splitters rely on a TBC circuit to align unsynchronized video signal before the signal processing begins.

### **TCP/IP (Transmission Control Protocol/Internet Protocol)**

These protocols enable communication between differing computer and computer networks. The IP is a connectionless protocol that provides the packet routing, while the TCP is connection based to provide reliability in communication and multiplexing.

### **TDG**

Time & Date Generator - device used to superimpose the time and date onto a video image.

### **Tearing**

A term used to describe a picture condition in which groups of horizontal lines are displaced in an irregular manner.

### **Telemetry**

The system by which a signal is transmitted to a remote location in order to control CCTV equipment, eg. to control pan, tilt, and zoom functions, switch on lights, move to preset positions, etc. The controller at the operating position is the transmitter and there is a receiver at the remote location. The signal can be transmitted along a simple twisted pair cable, or along the same coaxial cable that carries the video signal.

### **Telephoto lens**

In order to make distant objects appear larger, cameras require a telephoto lens.

### **Television Lines (TVL)**

This is a measure of the resolution of a video device. Higher number is higher resolution. 380 TVL is considered medium resolution. 480 TVL or greater is considered high resolution.

### **Termination**

This refers to a 75 Ohm terminator that is used to terminate each end of a video line.

### **Test Pattern**

A chart especially prepared for checking overall performance of a television system. It contains various combinations of lines and geometric shapes. The camera is focused on the chart, and the pattern is viewed at the monitor for fidelity.

### **Time Base Correction**

Method used to align unsynchronized camera signals, widely used by multiplexers and quad splitters.

### **Touch Screen Control**

A system by which all the camera controls are displayed on the screen of a special monitor. To control any function simply requires the screen to be touched at the appropriate symbol which can select a camera or pan, tilt, and zoom.

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The system is computer driven and can include maps, diagrams, etc. that are automatically displayed according to the alarm received.

### TP

Twisted Pair - an electrical conductor that consists of two insulated conductors twisted around each other.

### Tracking

A zoom lens that can stay in focus while zooming from wide angle to telephoto position is said to be tracking.

### Transducer

Device used to convert energy into an electrical signal.

### Transformer

A device used to transfer electric energy from one circuit to another, especially a pair of multiply wound, inductively coupled wire coils that affect such a transfer with a change in voltage, current, phase, or other electric characteristic.

### Transients

Signals which exist for a brief period of time prior to the attainment of a steady-state condition. These may include overshoots, damped sinusoidal waves, etc.

### Triplex or Triplex DVR

A triplex DVR is a DVR that can record, view/playback, and network (view remotely) at the same time. Keep in mind that manufacturers may use this term differently so check for details on the product. Compare to a *duplex DVR* or a *pentaplex DVR*.

### TVL

Television Lines - used to describe the resolution of a camera or monitor (460TVL).

### Twisted Pair

A cable composed of two small, insulated conductors twisted together. Since both wires have nearly equal exposure to any interference, unwanted noise is substantially reduced.

### TX

Transmitting equipment

### UDP (User Datagram Protocol)

UDP is a communications protocol that makes possible the sending of datagram messages from one computer to an application in another computer. It's connectionless and suffers from unreliability, since it is unable to check for any errors in delivery. UDP is often a protocol used in video streaming because it ignores lost data and continues the live feed of information (this being preferable to the interruption of real-time data while attempting to retransmit lost data).

### Unbalanced Signal

Term used for coaxial cable transmission.

### UPS (Uninterruptible Power Supply)

Justifiably popular with many electronics users, a UPS stores electricity in a battery and supplies power to a system (allowing a user to shut down w/out losing data or continue for a specific time period) during a power failure.

### Unterminated

Input of a piece of CCTV system that requires to be lopped to another piece of equipment for 75ohm termination.

### URL (Uniform Resource Locator)

The URL is the Internet address that a software browser requires in order to find that Internet resource.

### UTP (Unshielded Twisted Pair)

This type of cable is used to transmit video signals across distances greater than a coaxial cable can handle. The RG59 standard of UTP cable is roughly 600 ft. In conjunction with video baluns, they can stretch over 1200 ft. for full

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color video. UDP is cost effective too, mainly due to lower costs than coaxial cable, being easily terminated, and being capable of carrying data, video, and audio signals across the same cable with little interference.

### **Varifocal Lens**

A camera lens in which the focus is not fixed, it can be manually or automatically adjusted.

### **Vertical Resolution**

The number of horizontal lines that can be seen in the reproduced image of a television pattern.

### **Vibration sensor**

A device that activates when it detects vibrations in its detection zone, and then activates a specific surveillance camera is known as a vibration sensor.

### **Video Amplifier**

A wideband amplifier used for passing picture signals.

### **Video Band**

The frequency band width utilized to transmit a composite video signal.

### **Video Capture Card - DVR card**

Computer cards that you can install on the motherboard of a computer to create your own video recording computer .

### **Video compression**

This technique (often a MPEG format) compresses video into lower bit rates for easier Internet transmission, often along narrower bandwidths. Video or audio is compressed to shrink file size, ensuring acceptable transfer speed. Compressed video can sometimes be of a noticeably lower quality, but still clear enough to be useful. AVC is the successor to MPEG as the new video compression standard.

### **Video Gain**

An increase in video signal power by an amplifier, expressed as the ratio of output to input. Also called amplification.

### **Video Input**

A connection in a video controller or recording device that you can plug a camera into. The more video inputs (also called camera inputs) available on a device the more cameras you can connect to it.

### **Video intercom**

Used at door entryways, this system utilizes audio and video for communication or movement control of people.

### **Video Launch Amplifier**

An amplifier placed between the video source and the transmission cable, used where the signal needs to be processed before being launched over coaxial or twisted pair cables.

### **Video Motion Detection**

A system that detects motion in the video signal and generates a corresponding alarm. This can be accomplished by some cameras, multiplexers and digital recorders. This feature maximizes recording space by only recording while motion is detected.

### **Video server**

This enables an analog camera to be converted into an IP camera, able to stream digital video over an office network, phone, or ISDN connection. Therefore, an analog based surveillance system can be upgraded and networked to function as an IP surveillance system.

### **Video Signal (Non-Composite)**

The picture signal. A signal containing visual information and horizontal and vertical blanking (see also Composite Video Signal) but not sync.

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## SECURITY SYSTEMS

### **Video streaming**

Streaming video delivers compressed multimedia content over the Internet in a stream of packets. Viewers view the file as it downloads, instead of downloading the entire file first. Streaming video first initializes the transfer, and then buffers it. Bandwidth determines both picture quality and whether or not the viewed video catches up with the downloading content, which causes the video to stop. RealPlayer is one of the most popular free streaming video players available. Video streaming is commonly used for viewing live feeds from security cameras, with RTSP/RTP being the main streaming technology currently in use.

### **Video surveillance**

This term refers to the use of CCTV and DVR to monitor secure sites, or portions thereof. Video Surveillance systems can start with a few as one camera. For systems using more than 16 cameras, enterprise video surveillance systems are preferable. The many terms defined in this glossary give an idea of the many options available for different security needs and situations. In today's professional world, Video Surveillance (often referred to as CCTV) is the most cost effective way to achieve loss prevention.

### **Voltage Drop**

Voltage loss experienced by electric circuits due to two principal factors: (1) wire size and (2) length of wire runs.

### **Volt/Amp (VA) Rating**

The product of rated input voltage multiplied by the rated current. This establishes the "apparent energy" available to accomplish work.

### **WAN (Wide Area Network)**

A WAN is a communications network serving a geographically large area using satellite communications or telephone lines. The Internet is a WAN. Network IP Cameras are capable of utilizing WAN systems.

### **Watch Dog Timer Circuit Protection**

If problems are detected in the DVR computer the system will automatically reboot to correct the problem.

### **Waterproof**

A device that can be immersed in water and still function properly.

### **Watt**

A common unit of electrical power. A watt is dissipated by a resistance of one ohm through which one ampere flows.

### **Wavelength**

Wavelength is how far an electro magnetic wave travels during one cycle. When discussing DVR, the term refers to the color of light, which every color having a different wavelength.

### **Wavelet**

This type of image compression is mainly used for single images and not video streams. Because it's superior to JPEG compression, it is however used in some video surveillance codecs, though there isn't a universally adopted standard for usage of this codec.

### **WDM (Wavelength Division Multiplexing)**

This economical procedure enables data from different sources to be simultaneously transmitted over the same fiber optic link. It achieves this by assigning a unique wavelength to each data channel, resulting in many possible wavelengths traveling across one link, which allows one fiber link to do the same work as two or more.

### **Weatherproof**

A device that is weatherproof can be installed outside and stand up to harsh weather conditions and temperatures. However, it does not mean that it is waterproof.

### **Webcam**

Webcams are cameras that connect to the Internet, either via PC or directly, and that allow remote user access. An IP camera is a popular webcam for video surveillance that does not need a PC connection.

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## SECURITY SYSTEMS

### **White balance**

CCD security cameras feature this adjustment to compensate for ambient light color. Since there's a color difference between standard light bulb light and sunlight, white balance adjusts to ensure a more realistic picture. This feature may be set by manual adjustment, or it may have preset settings for the most common situations.

### **Wide angle lens**

This lens enables a wide view of the scene, with a magnification ratio less than 1.

### **Wireless**

The wireless transmission of video signals can be carried out over both short and long ranges, with 2.4 to 5 GHz devices for short distances and high-power line dedicated site solutions for several miles or more.

### **Wireless Camera**

Wireless cameras allow the transmission of video and audio data to be transmitted to the receiver without having to run wires (using radio waves).

### **White Balance**

A process used in video cameras to retain true colors.

### **White level**

The brightest part of a video signal corresponding to approximately 1.0 volt.

### **Zoom**

To enlarge or reduce, on a continuously variable basis, the size of a televised image primarily by varying lens focal length.

### **Zoom Lens**

An optical system of continuously variable focal length, the focal plane remaining in a fixed position.

### **Zoom ratio**

This measures the ratio between the maximum and minimum focal length that a zoom length is capable of.

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