

## CCTV Terminology

### '1' Stop

The ratio of the focal to the effective diameter of the lens, the smaller "1" stop the more light is passed. The "1" stop directly affects the depth of field.

### '2' WIRE

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

### 20mA CURRENT LOOP

Electric signaling method for CCTV used to control remote camera functions, data is sent via a pair of wires, offers greater distance capability and is less susceptible to interference than similar 2 wire transmission systems.

### 4 WIRE

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

### AC

Alternating Current

### ACTIVITY DETECTION

Simple of video motion detection, activity detection merely produces on alarm indication on change of light levels, often used with video multiplexers to increase the update on cameras when activity is occurring.

### ADDRESS

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

### AFC

Automatic Frequency Control - The automatic tracking of an oscillator to a specific narrow range of frequencies.

### AGC

Automatic Gain Control - an electronic circuit normally found in cameras which will increase the video signal in low light conditions, in normal operation it will maintain a constant level.

### AI

Automatic Iris - a function of a lens that automatically adjusts to varying light levels to allow the correct amount of light to fall upon the image sensor.

### ALARM ACTIVATED VCR

A VCR that is triggered to start from the idle position, this can take as long 20 seconds to spool the tape and start recording for a usable picture. If the VCR is in the time laps mode an alarm can take considerably less of a usable picture.

### 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.

### ALC

Automatic level Control - On all lenses a manual adjustment also known as

**Peak/Average**, a facility to make the lens respond more to the highlights (peak) or more the darker (average) scenes, providing user adjustment information seen in the highlight.

**AM**

Amplitude Modulation.

**AMBIENT LIGHT**

The general light level of a given area.

**ANALOGUE**

An electrical voltage that is proportional to a given input, i.e. a varying output.

**ANGLE OF VIEW**

The limits of a viewing area of a camera/lens.

**APERTURE**

The measure of a light gathering capability, the maximum aperture is the minimum 'F' stop of a lens, the lower the 'F' stop the better.

**APERTURE CORRECTION**

Switchable correction circuit which electronically the image of a picture.

**ARMOUR**

Protection given to a cable to provide resistance to damage that may be incurred from being crushed or cut.

**ASPECT RATIO**

Ratio between the vertical and horizontal image size of a camera sensor, the ratio is 4:3

**ASYNCHRONOUS DATA**

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

**AT COMMANDS**

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

**ATTENUATION**

Term used to describe the amount of loss seen in a video signal when transmitted from one point to another.

**AUX**

Auxiliary

**BACK FOCUS**

A mechanical adjustment for focusing a camera, it moves the image sensor in relationship to the lens to accommodate the different back focal lengths of lenses.

**BALANCED SIGNAL**

Term generally associated with the transmission of video signals over twisted pair cables, a circuit of two conductors equal to each other in voltage but opposite in polarity.

**BANDWIDTH**

A value expressing the difference between the upper and lower limits though a range of allowable frequencies.

**BAUD**

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

**BIT**

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

**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.

**BLC**

Back Light Compensation - an electronic feature of modern CCD cameras to allow viewing of highlighted scenes that would normally be silhouetted, thus providing more detail.

**BNC**

The most common form of video connector in CCTV.

**BPS**

Bits per second.

**BROADBAND**

Communications transmission where the signal is impressed on a higher frequency carrier.

**BRIDGING**

The connection of more than one electrical circuit or component in parallel.

**BURN**

The image that has stayed permanently onto the sensitive region of a camera or monitor tube.

**BUS NETWORK**

A topology network which all terminals are attached to a transmission medium serving as a bus.

**BYTE**

A unit of 8 bits.

**CABLE EQUALISER**

Increases the video signal level by amplification, used on long cable runs to compensate for the loss in video signal level.

**CAD**

Computer Aided Design.

**CAMEO**

Term seen in video multiplexer terminology, represents one sixteenth of one area of a full screen.

**CCD**

Charged Coupled Device - modern form of camera imaging device.

**CCIR**

Video Sync Pattern for most of Europe, Australia and the Middle East - 625 lines 50Hz.

**CCTV**

Closed circuit Television - A television system used for private purposes and not for public or general broadcast.

**CHROMA BURST**

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

**CHROMINANCE**

The part of the video signal that contains all the colour information.

**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.

**CLOCK**

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

**CMOS**

Complementary Metal Oxide Semiconductor - solid state switching device also used as camera pickup device - MOS chip.

**C-MOUNT**

Industry standard thread mounting portion on the rear of a lens. NOTE: a C mount lens can be used on a CS mount camera with 5mm adaptor ring, however a CS mount lens cannot be used on a C mount format camera.

**COAXIAL CABLE**

A cable containing a centre conductor with a screen around the same axis.

**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 pulses, but has no video information.

**COMPOSITE VIDEO**

The combination of all electronic information required to produce a video signal. Comprising 0.7 volts video and 0.3 volt sync hence the term 1 volt peak to peak.

**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**

Taking standard video signals and reducing them into compact digital data.

**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.

**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 bandpass.

**CRT**

Cathode Ray Tube - A device that is used to display information on a TV or monitor.

**CS TO C MOUNT ADAPTOR**

A spacing ring of 5mm that allows the use of C mount lenses CS mount cameras.

**CS-MOUNT**

Uses the same thread as C mount but requires the lens to be 5mm closer to the image sensor, new industry standard for lens mounting.

**DARK CURRENT**

The thermally induced current that exist in a photo diode in the absense 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.

**DB**

Decibel - A logarithmic ratio between two signals.

**DC**

Direct Current.

**DD**

Direct Drive - a new form of auto iris drive for lenses, whereby the lens requires a DC reference from the camera opposed to a video signal required by AI (auto iris) lenses.

**DECODE**

Seen in multiplexer terminology refer g to the playback of images from tape.

**DECOMPRESSION**

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

**DEFINITION**

The ability of a camera or monitor to resolve fine detail, measured in lines.

**DEPTH OF FIELD**

Area of view that is in focus, the depth of field decreases as the lens aperture increases.

**DESK TOP SWITCHER**

A device to select incoming signals from a number of cameras for display onto one or more monitors.

**DIGITAL SIGNAL**

A signal that is comprised of binary information i.e.; 1 or 0, to allow processing by microprocessor based equipment.

**DISTRIBUTION AMPLIFIER**

A device that seperates and amplifies input video signals for multiple outputs.

**DROPOUT**

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

**DTMF**

Dial Tone Multi Frequency - used by some manufactures for telemetry signaling over twisted pair cables.

**DUPLEX**

Seen in multiplexer terminology where two simplex units have been assembled as one unit, allowing the equipment to perform two functions simultaneously i.e.; record pictures to tape whilst displaying multiscreen images of cameras at the same time.

**DVR**

Digital Video recorder, a device used to record video images directly to a hard drive, the images may then be accessed instantly and archived to CD.

**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 duration a video switcher will stay on a camera before moving onto the next camera.

**EI**

Electronic Iris - A feature in modern CCD cameras where the camera electronics automatically varies the shutter to mimic an AI (auto iris) lens, allowing the use of fixed or manual iris lenses in a wider range of areas.

**EIA**

Electronic Industry Association - US TV standard 525 lines 60 fields.

**EMI**

Electro Magnetic Interference - Electrical or electromagnetic energy that may cause unwanted responses, degradation or failure in electronic equipment.

**ENCODE**

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

**ERROR CORRECTION**

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

**EXTERNAL SYNC**

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

**FC**

Foot Candle - American measurement of light  $10\text{fc} = 1\text{lux}$ .

**FI**

Fixed Iris

**FIBRE OPTIC**

More efficient method of sending signals than the conventional method of copper cable.

**FIELD**

One half of a frame comprising 312.5 lines there are 50 fields per second.

**FIELD OF VIEW**

The image area area produced by any camera/lens combination.

**FLANGE LENGTHS**

Referring to lenses - C mount = 15.52mm CS mount = 12.5mm

**FM**

Frequency Modulation.

**FOCAL LENGTH**

Of a lens and measured in millimetres, has a direct relationship to the angle of view that is obtained, a short focal length provides a wide angle of view and a larger focal length provides a narrower angle of view.

**FOCAL POINT**

The point of which light passing through a lens is concentrated.

**FRAME TRANSFER**

Type of CCD imager used by some cameras.

**FREQUENCY REPOSE**

The capability of a device to transmit and receive a given range of frequencies.

**FRONT PORCH**

A portion of a composite video signal that is located at the start of the horizontal blanking pulse and the start of the corresponding sync pulse.

**FSK**

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

**FULL PICTURE UPDATE**

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

**GALANOMETRIC**

A method of converting the minute electric currents produced by AI (auto iris) circuits, used by both AI and DD (direct drive) lenses.

**GAMMA CORRECTION**

Balances the light seen by the camera to that of the monitor.

**GEN LOCK**

As per external sync, allows cameras to synchronise to a common signal, providing bounce free switching of displayed images.

**GHOSTING**

Multiple images caused by video signal transmission echoes, not to be confused with 'burn in'.

**GIGA**

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

**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.

**GROUND LOOP**

Picture interference caused by different earth potentials at each end of video coaxial cable, clearly seen as humbars or interference.

**HARDWARE COMPRESSION**

Video data compression taken place in specialised purpose built microchips.

**HARDWIRED**

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

**HAYES COMPATIBILITY**

Implies that the modem complies with the Hayes AT command language used by most communications software packages.

**HELICAL SCAN**

Recording system used by VCR's, a record/playback head used by VCR's whereby the head rotates scanning the video tape in helical path.

**HORIZONTAL RESOLUTION**

The amount of information that can be displayed (measured in lines) upon a VDU.

**HZ**

Hertz - Cycles per second, method of which frequency is measured.

**IDENT**

Camera capture or number displayed on a video signal.

**ILLUMINANCE**

Measurement of light in lumens per square metre, unit of which is Lux.

**IMAGE INTENSIFIER**

A devise that uses fibre optics to increase the sensitivity of a pick up tube.

**IMAGE PLANE**

The surface upon which an image is formed in a camera.

**IMAGE SENSORE FORMAT**

Refers to the size of the image plane within a camera.

**IMPEDANCE**

Measured in ohms, refers to the combined resistance and reactance in an electrical circuit.

**INTERLACE (2:1)**

Refers to the combination of two fields, one odd and one even to produce a single frame.

**INTERLEAVING**

Term seen in multiplexing, when a camera is alarmed be it via external means PIR (passive infra red movement sensor) or by activity detection then it is recorded more frequently to tape, it is recorded every other camera for instance should camera #4 be triggered then the recording sequence would change.

**INTERLINE TRANSFER**

Type of CCD chip in which the photosensors acquire and store an electric charge according to the intensity of light falling on them.

**INTERNAL SYNC**

Crystal controlled oscillator with a camera that is DC powered.

**IP RATING**

A rating used to provide an index of protection from elements such as water and dust ingress.

**IR LIGHTING**

Infra Red lighting that is above the visible wavelength, used for discrete illumination in CCTV systems.

**IR SHIFT**

Difference in focus of a camera's field of view between with an IR lighting.

**IR TRANSMISSION**

Method of sending video signals and/or data over free space, distance and quality of transmission is affected by environmental conditions such as fog and rain.

**IRIS**

Mechanism within a lens to regulate the amount of light that passes through and falls upon the image sensor.

**ISDN**

Integrated Services Digital Network - an international standard for voice and data communications offering greatly improved transmission speeds than the older PSTN network.

**ISIT**

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

**ISO**

International Standards Organisation

**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 - Communications network for electronic equipment, limited to a single building or site.

**LASER**

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

**LEASED LINE**

A telephone connection giving a permanent point to point link.

**LED**

Light Emitting Diode

**LINE AMPLIFIER**

Device that prepares a signal for transmission over extended cable runs, by amplifying the signal strength.

**LINE FED**

A camera that is powered down the same cable which it uses to send the video signal information back to the monitor.

**LINED LOCKED**

A camera that is synchronised to the frequency of its AC power supply.

**LINE POWERED**

Same as line fed

**LOOPING**

A piece of video equipment that allows video signals to pass through with out being terminated.

**LUMINANCE**

' Y ' - The monochrome element of a video signal.

**LUX**

Unit of light measurement.

**MATRIX SWITCHING**

A video switcher that allows any video signal input to be switched to any monitor output.

**MCL**

Maximum camera length.

**MFD**

Mode Field Diametre - Term used in fibre optics.

**MI**

Manual Iris

**MICROWAVE TRANSMISSION**

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

**MODE**

Path taken by light rays along fibre optic cable.

**MODULATION**

A process of varying a carrier signal in relation to another signal.

**MONITOR**

A video display unit used to display images from a camera or computer.

**MONOCHROME**

Term used for a black & white image.

**MOS**

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

**MTBF**

Mean Time Between Failure - The average time between between equipment or component failure.

**MTTR**

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

**MULTIMODE**

An optical fibre that supports more than one propagation mode.

**MULTIPLEXER**

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

**MULTIPLEXING**

A process in which multiple cameras are transmitted or recorded.

**MUX**

Multiplexer unit.

**ND**

Neutral Density

**ND FILTER**

A glass filter that attenuates the light evenly over the visible spectrum, used to force the lens iris open in order to focus the camera for low light operation.

**ND SPOT FILTER**

A graduated filter fitted to the centre of a lens, restricting the amount of light that can pass through to the CCD imager eliminating the iris closing completely during bright conditions.

**NOISE**

This normally appears as a snowy or grainy picture.

**NON COMPOSITE VIDEO**

A video signal minus synchronisation information.

**NTSC**

National Television Standards Committee.

**PAL**

Phase Alternate Line - Television standard for most of Europe, Australia and the Middle East.

**PANNING**

When a camera moves from left to right

**PAN & TILT**

Pan & Tilt head - A device that will move the camera both horizontally and vertically from a remote location.

**PCM**

Pulse Coded Modulation

**PEAK TO PEAK**

A value based on the maximum positive and the maximum negative of a wave form for video the standard is 1Volt.

**PEAK WHITE INVERTER**

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

**PH**

Pine Hole, referring to a pin hole lens.

**PHOTO DETECTOR**

A device fitted to fibre 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**

Quantum of electromagnetic energy, a particle of light is a photon.

**PIGTAIL**

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

**PIP**

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

**PIXEL**

In a digital display a pixel is the smallest individual dot that can be separately illuminated.

**PL259**

UHF connector commonly replaced by the BNC connector in CCTV systems.

**PRE-SETS**

Pre-programmed positioning of pan/tilt/zoom/focus functions on cameras or dome cameras activated by an alarm input such as movement sensor or by the system operator.

**PROTOCOL**

A set of rules governing the flow of information in a communications system.

**PSTN**

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

**PSU**

Power supply Unit

**QUAD SPLITTER**

A device used to display four camera images at the same time on one monitor.

**RACK MOUNT**

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

**RANDOM INTERLACE**

Method of television scanning that does not define a strict relationship between adjacent scan lines in sequential fields.

**RASTOR**

Pre-defined scanning area for a television picture tube.

**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.

**REMOTE SWITCHER**

A video switcher within a master control unit that can be controlled remotely by a single coax cable or pair of cables.

**REPEATER**

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

**RISE TIME**

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

**RS170**

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

**RS232**

Communications network.

**RS422**

Communications network

**RS485**

Communications network

**RX**

Receiving equipment

**SCANNER**

Device for remotely controlling the horizontal movement of a camera (panning).

**SCART**

Standard European connector for carrying audio and video signals.

**SCENE ILLUMINATION**

The density of light falling upon a scene to be viewed, measured in Lux.

**SCREEN SPLITTER**

Device used to display two cameras on a single monitor, splitting the screen either horizontal or vertical.

**SECAM**

Sequential Colour & Memory - Colour television broadcast system used in France.

**SENSITIVITY**

For a camera usually specified in Lux to provide indication of light level required to gain a full video signal from the camera.

**SHUTTER**

Electronic circuit found in many CCD cameras which allows the light gathering period of the camera to manually altered.

**SIMPLEX**

Term seen in video multiplexers, with a simplex machine you can only perform one function such as if you are reviewing images from tape, you cannot record images or view live images in a multi-screen format.

**SIT**

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

**SLAVE**

A secondary item such as a control position that performs the same or restricted functions of the master unit. **SLOWSCAN**  
Old form of video transmission over telephone networks, replaced by Fastscan and DVST systems.

**SN RATIO**

Signal to Noise Ratio - the ratio of maximum peak to peak signal voltage to the RMS voltage of the noise at a given time, measured in Decibels.

**SOFTWARE COMPRESSION**

Video data compression achieved by computer program processing.

**SPECTRAL RESPONCE**

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**

An amplitude surge, an undesirable momentary increase in electrical current or signal.

**SVHS**

Super Video Home System - a higher resolution recording medium than VHS.

**SWIVEL MOUNT**

Used on camera and housing mounts to allow precise positioning of cameras.

**SYNC GENERATOR**

A device that produces a synchronisation signal.

**SYNCHRONISATION**

The occurrence of two or more electrical events at the same time - in sync.

**SYNCHRONISATION DATA**

Data and synchronisation pulses sent at the same time, used for more sophisticated communications

**TA**

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

**TDG**

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

**TELEMETRY**

Electronic signaling method, in CCTV used to remotely control camera functions.

**TERMINATION**

In CCTV the termination is 75 ohms, if a signal is being looped then the equipment should be set to Hi-Z (un-terminated).

**TIME BASE CORRECTION**

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

**TIME LAPSE VCR**

A VCR that can slow down its recording rate, used to extend the length of recording on a standard 3 hour tape to as much as 960 hours (the greater the time lapse rate the less frames recorded per second).

**TOUCH SCREEN CONTROL**

Ability to control camera and system controls from the VDU screen, by simply touching the relevant object or icon.

**TP**

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

**TRANSDUCER**

Device used to convert energy into an electrical signal.

**TVL**

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

**TX**

Transmitting equipment

**UNBALANCED SIGNAL**

Term used for coaxial cable transmission.

**UNTERMINATED**

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

**Varifocal**

A type of lens that allows that allows manual adjustment between two focal points to provide the required field of view.

**VCR**

Video Cassette Recorder.

**VDU**

Video Display Unit.

#### **VERTICAL INTERVAL SWITCHING**

Sequential video switchers that wait for the current field has completed its cycle before switching to the next camera, even though the dwell time may have been exceeded, thus reducing the amount of bounce seen between switching images.

#### **VHS**

Video Home System - VCR format name given to 1/2 cassette tape used in VCR's.

#### **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.

#### **VMD**

Video Motion Detection - not activity detection, a process of determining motion by complicated electronic analysis of picture signal and or neural computing techniques.

#### **V.24**

List of definitions between terminal equipment and modems.

#### **V.34**

28800 bps modem for PSTN and leased line circuits.

#### **WAVELENGTH**

Distance between two points on adjacent waves, the time necessary for a wave to complete a single cycle.

#### **WDM**

Wavelength Division Multiplexing.

#### **WHITE BALANCE**

Used in colour CCD cameras. White should be referenced and determined by colour temperature for the truest colour rendition.

#### **WHITE LEVEL**

The brightest part of the picture corresponding to 1volt peak to peak (0.7V above black level).

#### **X.21**

General purpose interface between data terminal equipment and data circuit terminating equipment for synchronous operation on public data networks (ISDN).

#### **Y/C**

Video signal containing separate luminance(y) and chrominance(c) to provide greatly improved picture quality from VCR's (SVHS)

#### **ZOOM RATIO**

A lens with a variable elements giving adjustable magnification and differing fields of view in one such as 12:1