

SELECTING THE CCTV SECURITY SYSTEM THAT IS RIGHT FOR YOU

When buying a security camera or complete CCTV system you need to consider the main purpose of the system. For example, is it to be used for:

- Observation
- Recording
- Evidence
- Deterrence
- Combination of the above

The application will determine the type and specification of the system that is needed. Consideration of the following factors will also help you select the most appropriate system

1 CAMERA SELECTION

1.1 Location

Is the camera to be located indoors or outdoors? If outdoors then you need to ensure that it is appropriate for the environmental conditions that are likely to be encountered such as rain, snow, sun-glare, low light etc.

Outdoor cameras should either be classed as weather resistant or mounted in a special enclosure to provide protection

All Voltek outdoor cameras are weather resistant and the cable entry points are sealed. The leads are of sufficient length to enable connections to be made inside the building.

1.2 Light Levels

Choosing the right camera based on the amount of available light is very important for an effective security system. An ordinary colour or even monochrome camera will not give very good pictures in low light conditions although the monochrome will perform better than an equivalent colour one.

Solutions available for low light conditions can include:

- B&W cameras with built in IR illumination
- Colour Day / Night cameras
- Use of additional security lighting
- Use of a separate IR illuminator in conjunction with a monochrome camera. When using IR illumination ensure that the range of the illuminators is adequate for your needs.

Light levels are usually measured in lux and although full daylight can be around 10,000 lux, dusk can be as low as 1-10 lux, complete darkness is 0 lux and side street lighting can also be less than 1 lux in

some cases. The closer a camera is rated to 0 lux the better its performance in low light levels

1.3 Colour, Black and White or Day Night Cameras

B&W cameras generally provide better image quality than colour ones at lower light levels. They are also usually cheaper than colour ones of equivalent specification.

Colour cameras require the availability of good lighting and will generally provide better recognition capability.

Day Night cameras provide the best of both worlds in an external environment. They operate as colour cameras during the day (or in good light conditions) and automatically change to B&W when the light levels drop. All Voltek Day Night cameras are supplied with built-in Infra-red illuminators which enable the cameras to see in darkness

1.4 Wired or Wireless

Wireless cameras are easier to install. There is no cabling to run from the camera to the receiver and they are ideal for temporary applications, rapid deployment or where running cable is not desirable.

The cameras do however require a power source and whilst most will have the capability to be powered by batteries these do not have a very long life - a matter of hours in some cases. Wherever possible the cameras should be powered by the mains.

Typical range for wireless camera systems is 100m free-space but this can reduce significantly to around 20 meters in a typical household environment.

In some cases there is also the potential for interference when using wireless systems

1.5 Visible Deterrence or Covert / Discreet Monitoring

For visible deterrence the use of larger cameras housed in traditional enclosures are ideal.

For covert or discreet applications Voltek can supply cameras that are:

- Very small and can be installed in covert locations, or
- In enclosures designed to disguise the presence of a camera

Many of the cameras manufactured by Voltek are both stylish and discreet in the design of their enclosures and this makes them very suitable for domestic applications

1.6 Audio

If the ability to monitor or record sound is important then the camera needs to have a built-in microphone. This enables one-way audio monitoring.

Some cameras such as the SuperCam2 from Voltek have a 2-way speech facility that enables you to speak with your visitor without answering the door.

1.7 Camera Viewing Quality

The resolution, size and type of camera sensor will influence the quality of the viewable image.

1.7.1 Resolution – This is expressed as the number of television lines (TVL) that the camera is capable of producing. The higher the TVL value the greater the resolution and hence the quality of the images. A typical entry-level camera will be around 300 TVL with higher resolution cameras having a value of 400+ TVL.

1.7.2 Size – A larger image sensor will give a better image definition than a smaller sensor. For example, a 1/3" image sensor will produce a better image than a 1/4" sensor

1.7.3 Type – There are 2 types of image sensor. CMOS sensors are mass-produced and used in entry-level cameras to provide cost savings. CCD sensors are used in professional CCTV cameras and provide a higher quality image

It is important to remember that the quality of the recorder also influences the quality of the CCTV footage. For example, if you use a high-resolution camera but a low-resolution recorder then the CCTV footage that is captured will still be of low resolution

1.8 Single Camera or Multiple Camera Systems

Do you need to protect and view a single area or multiple areas? If you are likely to require protection of additional areas at a future date then consider buying a system that can be expanded as and when required.

Voltek has a range of products that will allow you to connect and use up to 4, 8 or even 16 cameras. These include:

1.8.1 Switchers - These are units that enable a multi-camera system to switch between the various cameras. The switching can be done in a number of ways:

- Manually by the user
- Automatic sequential switching between cameras
- Upon detection of movement by a PIR camera

The cameras are connected to the switcher and the output from the switcher can be viewed on a TV or it can be

connected directly to the recording device such as the VCR or DVD recorder.

CCTV switchers can typically allow connection of upto 4 or 8 cameras. The Spectrum control units from Voltek also have additional built-in functionality such as automatic video activation and time and date stamp.

It is important to remember however that using a switcher will only allow you to view and record one camera at a time.

1.8.2 Standalone DVRs - Use of digital video recorders allows single or multi-camera systems to be viewed and / or recorded simultaneously.

Voltek supplies a range of 4, 8 and 16 channel DVRs allowing you to install a very comprehensive security system.

1.8.3 PC-Based Systems - These make use of a PCI card that is fitted inside your computer. They will allow connection of upto 4, 8 or 16 cameras and help turn your existing PC into a sophisticated security system

2 RECORDING OPTIONS

If you want to be able to record your CCTV footage then the following factors need to be taken into account:

- Maximum length of recording time required
- Quality of recording
- Method of recording:
 - Continuous
 - Manual
 - Event Led - i.e. when your system detects motion
- Recording Equipment
 - Analogue
 - Digital
- Capability for storage, retrieval and transfer of cctv footage

2.1 Domestic VCR

This is a simple and low cost option that can provide good quality footage recorded in real time. VCRs can be used to provide continuous recording of up-to 8 hours or event led recording when used in conjunction with a PIR camera and a VCR activator.

When using PIR cameras to carry out event led recordings you need to consider the start-up time for the VCR. For example, if the recorder takes a few seconds to actually begin recording each time it receives the signal from the camera then the event may have elapsed before it

is recorded (a person walking across the camera range may have passed the field of view before the image is captured on tape).

In these situations a separate PIR detector could be used to trigger the recording and overcome this problem. The other thing to bear in mind is that you cannot set the VCR to record a TV channel whilst the camera input is selected.

2.2 Domestic DVD Recorder

These operate on a similar principle to the domestic VCR but offer the additional benefits of:

- Higher quality digital recording
- Increased storage capacity
- Improved search and retrieval capability

However, for disk only recorders the start-up time before recording actually commences is generally longer than a VCR. To overcome this it is recommended that recorders with a built-in hard drive are used

2.3 Standalone Digital Video Recorders

These are rapidly becoming the most popular method of recording CCTV footage. Essentially a DVR is a standalone piece of hardware that is designed exclusively for recording CCTV footage. It has a number of clear advantages over the traditional analogue systems and these include:

- **Storage Capacity** – Days, weeks and even months of high resolution recording is possible through use of large capacity hard drives
- **Consistent Quality Recording** – No deterioration of image quality no matter how many you overwrite onto the recording device or how long you store the images for
- **Viewing and Retrieval** – Quick and easy access of footage due to digital format
- **Transfer and Storage** – The digital format allows ease of transfer and storage of footage. Transfer and storage capability is further enhanced by DVRs with built-in CD writers and USB ports.
- **Remote Access** – Many DVRs have the capability for remote access from anywhere in the world through use of a remote PC
- **Multiplexed Recording** – Capability to view and record multiple cameras simultaneously.

2.4 PCI Cards

These are digital video capture cards that can be fitted inside your existing PC to allow the connection of multiple CCTV cameras. The functionality and benefits of PCI cards is very similar to that of DVRs

3 DETECTION

Even with systems that have a very long recording capacity, it is not always desirable to record continuously. Event-led recording is a more efficient means of capturing relevant footage and can be achieved by:

3.1 PIR Movement Detectors

Some cameras have PIR detectors built-in and for those that don't it is possible to install a separate PIR as part of the overall system. In multiple camera systems with PIRs the footage that is being displayed on screen will automatically change to the area that has detected movement.

3.2 Video Motion Detection

This is used in digital CCTV systems and works by analysing the video signal from a camera. Changes in signal are recognised as movement and subsequently used to trigger recording if required.

All Voltek digital systems allow users to mark one or more rectangular areas within the display screen and only when motion is detected within these areas will the system begin recording.

Where possible, use of PIR movement detection is preferable rather than video motion detection, as it more reliable particularly for external use

4 TIME AND DATE STAMPING

This feature superimposes the time and date onto your CCTV footage. Having this feature can be really useful to identify when an event occurred and was recorded, particularly if the footage is to be used for evidence purposes.

For domestic systems Voltek offers a separate time and date generator (CT230) that can be added to your system. The Spectrum control unit has this facility already built-in.

The facility is also integral to all the Voltek range of digital CCTV systems

5 CABLE AND CONNECTORS

Cameras can be connected in a variety of ways. All our domestic cameras are supplied with 20m of cable and scart and / or phono plugs to connect directly into your TV, VCR or DVD recorder. All our professional cameras are supplied with 20m of cable and BNC connectors that will plug into our range of digital recorders.

The Voltek camera leads can be extended upto 100m in total by the use of appropriate extension leads. Co-axial cable with a local power

supply to the camera can enable the camera to be sited upto 250m away from the monitor or recording device

Detailed information on connectors and cable for each of the Voltek cameras is available on the relevant product page on the website

6 CAMERA PROTECTION

If your camera is likely to be a target for vandals then consider protecting it with one of our wire cages (1822 or 1825)