

CHOOSING A CCTV SYSTEM

Volume production, major advances in technology and growing demand for ever more sophisticated applications have led to some exciting developments in the field of CCTV systems and lower prices! There is no doubt that a quality CCTV system, when properly installed for an appropriate application, can be an invaluable aid to any organisation.

Among the many applications where CCTV can play a valuable key role are:

- Security applications
- Safety applications
- Production control
- Process control
- Sales monitoring
- Customer monitoring
- Traffic monitoring
- Access control

What sort of system do you need?

Plug-n-play observation systems

In its simplest form this could be a single mono CCTV camera linked to a TV. Ideal for domestic applications such as viewing visitors at the front door, or monitoring baby's room. This type of system may also be

suitable for use by the smaller business for certain applications.

More sophisticated systems allow connection of up to four cameras directly to a specialist switcher monitor, which may offer the facility to view all cameras at once, to view a single camera, or to view images from each camera in a sequential cycle. Such systems are ideal for smaller commercial or retail premises and industrial units.

Plug-n-play systems, normally incorporate line fed cameras, where each camera typically draws its power supply down the cable that connects it to the monitor thus eliminating the need to run a separate power supply to each individual camera. Either type of plug-n-play system will allow images from the cameras to be recorded onto a standard VHS format tape via a standard video recorder or a specialist 'time lapse' VCR or 'event recorder'.

Direct connect multi camera systems

Typically where more than four cameras are required for a site, a more sophisticated system will be required, which will probably require professional installation. Cameras will typically require separate power

supplies, and a multi channel multiplexer will probably be required to connect the cameras to the monitor and / or VCR, or digital recorder.

A multiplexer is a smart switcher unit that controls the images from multiple cameras and organises them in a way that allows them to be viewed on a monitor and / or recorded onto a VCR. The simplest form of multiplexer performs as a sequential switcher, displaying / recording images from each camera in turn, whilst more sophisticated units allow one image (or image set) to be viewed whilst a different set of images may be recording.

Remote view transmission systems

Typically such systems utilise conventional CCTV cameras connected to a PC, specialist digital recorder, or microprocessor based smart box.

With a smart box system, cameras are physically connected into a black box containing a microprocessor and a modem. The modem is connected to a standard dial up telephone line allowing dial up access to and viewing of the images from the local cameras, via a remotely located PC

loaded with suitable remote view software. Smart box systems offer cost effective solutions for monitoring activity in 'real time' at remote sites without the need to deploy expensive staff to site, but will typically only offer very limited if any local image recording.

PC based remote view systems operate similarly to smart box systems, however cameras will typically connect directly to a card(s) installed into a PCI expansion slot(s) of the PC. Images from the camera(s) can be recorded digitally onto the hard drive of the PC, from where they can be archived for permanent retention as required, or over-recorded in sequence as the disc becomes full if the images are no longer required. Parameter driven software allows the user to exercise a high level of control and customisation over the system, ensuring that it meets local needs. Typically the PC to which the cameras are connected will itself be connected to a Local Area Network (LAN) allowing dial in access for remote viewing of images via a remotely located PC loaded with the remote view software and connected to a modem or another LAN. PC based / networked systems will typically accommodate the connection of up to hundreds of

cameras if required (although they start at two camera systems), with the larger multi-camera systems being popular with organisations such as airports and multinational companies.

Specialist digital recording systems are also available where the cameras are connected to a purpose designed machine. Non editable, digital recordings will typically be written onto a hard drive (or multiple hard drives) offering capacity for almost limitless recordings to be made in a format which allows for their use as prosecution evidence if required.

Remote view systems have over recent years become much more sophisticated and reliable and have dropped significantly in price to become a viable proposition for even the smallest of companies. This is a rapidly developing branch of CCTV which is likely in the near future to change many of the established concepts of CCTV image storage and also the way in which CCTV systems are used.

Wire free systems

Wire free systems offer a solution to installing CCTV systems in wire saturated

buildings and are also ideal for use in covert or temporary monitoring applications.

Low cost systems with license exempt operation and an RF transmission range of up to a couple of hundred metres are now easily affordable, offer high quality images and reliable performance. Longer distance systems with transmission ranges of up to about four kilometres are also available although naturally such systems are more expensive.

With the availability of remarkable quality, battery powered, full colour, wire free, sub miniature CCTV cameras smaller than a 50p coin, covert surveillance has never been easier or more affordable.

Vehicle based systems

Vehicle based systems offer an ideal tool, for both safety and security applications

Vehicle mounted image viewing systems (e.g. vehicle reversing systems) will typically be installed as safety aids, whilst recording systems are more likely to be installed as an aid to security.

Automated number plate recognition / specialist systems

Automated number plate recognition systems have become popular over recent years and a number of specialist suppliers have evolved to meet the growing demand.

Such systems generally allow number plate registration numbers to be stored on a computer database and linked to a location, driver, etc. Such systems are installed for a variety of reasons and potentially offer significant benefits.

Statistics indicate that where such systems are installed, vehicle theft and other forms of crime tend to drop noticeably and they can significantly reduce unauthorised through traffic, in the area in which they are installed. (Stopping use of streets as traffic 'rat runs'.)

When linked with other technology these systems can be used to automatically operate electronically controlled gates, rising bollards, etc. for authorised vehicles, making them ideal for use in residential areas as well as for controlling traffic flow, logging personnel or visitor attendance on commercial sites.

Video recording good practice guide

The Police, UK Home Office and Local Government Information Unit, amongst others, all publish recommendations that have regard for the production of video recordings as credible evidence and Data Protection Act compliance.

This publication makes no pretence at being anything other than a brief guide for the benefit of individuals responsible for the management of CCTV systems as part of their overall job description.

Video recordings that may eventually be used as evidence in a court of law must have been demonstrably and effectively managed throughout their lifetime within the system. The following points of good practise should be adhered to:

- The tape must be identified by unique serial number, preferably indelibly marked on the cassette casing.
- Tapes must be stored in a lockable enclosure and the keys securely managed.
- Recordings must have the correct time and date overlaid on the recorded image, this is normally a function of the video recorder.

- Video recorders should be installed in a secure room accessible only to authorised staff or in a lockable enclosure.
- It is not good enough to record over previously recorded information. Tapes must be erased before being reused or disposed of.
- Log entries must be made of:
 - Issue of tapes / discs / video prints, usage and disposal
 - Incident reports
 - Issue and retrieval of recordings to and from third parties
 and unless covered by existing record keeping:
 - CCTV system maintenance and fault log should be kept
 - The following points should be a matter of record in CCTV control rooms:
 - Operator log on and off duty
 - Visitor log in and out
- The generally accepted archive period is 31 days.
- Video tapes should be replaced with new tapes after 12 uses.
- When a tape is withdrawn for evidence purposes the recording tab should be removed from the cassette.
- It is the system operator / owner who is responsible for the safe custody and eventual disposal of recordings produced by the system. This responsibility does not normally pass to any third party given the use of such recordings.

Vehicle mounted CCTV systems can be very cost effective and offer a host of benefits to drivers and vehicle fleet owners.

In-cab viewing systems are typically used as an aid to safety, whilst recording systems are typically installed as an aid to security

Benefits of vehicle mounted CCTV systems include:

- Helping to avoid the risk of personal injury
- Saving potential insurance claims for property damage
- Reducing time and costs for repairs to vehicles
- Increasing driver awareness and confidence
- Simplifying lining up towing hitch, checking lights
- Improving safety through ability to monitor load / cargo whilst in transit (including livestock)
- Passenger monitoring for security and safety

Vehicle reversing systems

A vehicle reversing system will normally comprise of an in cab monitor to which one or two strategically mounted CCTV cameras will be linked. If required a 12v VCR or digital recorder can be used for recording images from the

camera(s). Reversing systems can significantly improve safety and driver confidence and can reduce the risk of injury to pedestrians, or damage to vehicles or property whilst reversing large or awkward vehicles. Such systems can easily pay for themselves over a short period of time as each time a vehicle is taken off the road to repair accident damage has a financial implication as do insurance excess payments for damage to third party property.

Ideal for commercial vehicles, buses, coaches, horse boxes, motor homes, and caravans, cameras can also be used to monitor passengers, cargo and livestock, whilst in transit.

Vehicle based image recording systems

Recording images onto an in-vehicle image recorder has proved helpful to existing users when analysing accident footage, assaults on drivers, malicious damage to vehicles, and road rage incidents.

Publicised use of CCTV / recording systems act as a deterrent to vandalism and passenger violence. They also provide potential prosecution evidence should the worst happen. Recording options include time and date stamp on

recordings (essential for prosecution use) and incorporation of vehicle registration number with recorded images.

Special customised systems incorporating automatic start / stop of recordings, leave the driver free to concentrate on driving, and are ideal for use in taxis, buses and coaches.

Vehicle based multi camera systems

Certain types of installation such as those on buses, benefit from the use of multiple cameras (which may incorporate some covert models). Multi camera systems are often installed without an in-cab monitor which could prove distracting to the driver.

Covert site monitoring

A suitably housed and concealed covert wire free camera temporarily located in an appropriate position, transmitting the CCTV images to a portable VCR and monitor system installed in a nearby vehicle, offers an ideal solution for covert surveillance. The easy way to monitor comings and goings from site with back up evidence for subsequent discussion with contractors.