



AIG Crisis Solution
Prevention Management

Closed circuit television



Closed circuit television (CCTV) is useful for surveillance; distinguishing false alarms from genuine alarms; and checking who is requesting admittance at remotely controlled doors and gates.

Closed circuit television

In its simplest form, a CCTV system consists of a television camera joined by a transmission link such as a cable to a monitor sited in a guard room or a central control point. More complex systems use several cameras and monitors, or a single monitor with a switching system to display different pictures in sequence.

CCTV should form part of a wider security system and should not be used on its own. It cannot replace security staff, although it may allow you to employ a reduced number.

Specialists are available to talk you through this booklet and provide any additional information that you require.

Get in touch on

pcprevention@aig.com

to arrange a telephone appointment.

Well designed CCTV systems:

A well designed CCTV system provides the following advantages:

- Can enable staff to detect intruders from a secure location.
- Can provide unique vantage points for surveillance, such as cameras on long poles.
- Provide a strong deterrent to intruders.

However, many CCTV systems:

Most CCTV systems have the following limitations:

- Can be expensive to install and maintain.
- Are vulnerable to failure of equipment and power supply.
- May be blinded by fog, smoke, snow or heavy rain.
- Are vulnerable to operator failure.
- May miss an intruder beyond the camera's field of view.

Designing an effective system

When considering using CCTV, it is essential to be clear about what you expect it to do – and then specify your requirements from there. This should be followed by a site survey, which must be carried out with expert advice.

Requirements

Your requirements can be determined by answering the following questions:

- What is the system to see?
- What are the conditions likely to be (day/night/fog etc)?
- What degree of detail is required?
- What system response time is acceptable?
- Who is to monitor the system and from where?
- What are the response procedures to an incident?
- How is the system to be maintained/repaired?
- What future facilities are likely?
- Are there any physical limitations on the camera positions?

Site survey

A site survey should be carried out during the day-time and at night (if night coverage is required) and cover the following points:

- Terrain: different backgrounds give widely differing results from the same camera – eg asphalt, red brick buildings, unpainted concrete surfaces.
- Climate and environment: camera performance can be adversely affected by heat, ice, high rainfall, condensation, dirt, dust and so on. Therefore, cameras may require special features such as sun shades or wipers.
- Existing light sources: existing light sources such as reflections, street lights and car headlights must be identified and screened, or cameras sited to avoid them.
- Camera locations: good locations for cameras to be mounted should be recommended – bearing in mind that access will be required for maintenance.

Lighting When 24-hour surveillance is required for external areas, it is usually necessary to use artificial lighting. This must be evenly spread over the detection area and be of a suitable intensity and colour quality. Low light cameras can be used, but they perform far better with some artificial light.

Where visible lighting is unacceptable, infra-red lighting and cameras can be used, but they are generally less effective than visible lighting and more costly to install and maintain.

Selecting equipment

The following descriptions provide top line information only about the types of CCTV equipment available. Individuals and organisations should seek expert advice on the right CCTV equipment for their specific needs.

Cameras

Cameras may have fixed fields of view or be mobile, with pan, tilt and zoom capabilities. Fixed cameras are normally preferable on the grounds of simplicity, reliability, cost and because their fixed fields of view ensure that they survey the areas requiring coverage. Mobile cameras can, however, provide surveillance of a much larger area. Because of the complexity of most outdoor sites, a mixture of both static and mobile cameras often provides the best solution.

Colour cameras tend to be substantially more expensive than black and white cameras, and their performance is generally poorer in respect of light sensitivity, contrast, signal-to-noise ratio, required maintenance intervals and service life. However, much depends on the exact requirements of the surveillance system. For example, colour cameras are much more useful for recognising vehicles and people in daylight conditions.

Lenses

Lenses may be wide angle, narrow angle or telephoto. The standard camera lens size is 8.5mm, but 25mm lenses are common as they gather more light and provide an improved picture as a result.

Zoom lenses are available and are frequently used in combination with automatically controlled pan and tilt cameras.

Transmission links

Several means can be used to transmit the image signal from the camera to the monitor. The most common is coaxial cable because it is the simplest and cheapest. Other forms of transmission include twin wire cable, fibre optic cable, microwave link and laser/infra-red optical links.

Monitors

Reliability, robustness and picture brightness are the main considerations when selecting a monitor.

Monitors should be kept in a secure area such as a guard room because unauthorised viewing must be prevented. Additional monitors may also be kept in a separate control point to improve security.

Monitors may be linked to automatic or manually controlled switchers that display pictures in sequence on one or a small group of monitors. However, as fatigue and boredom limit effective viewing to at most 20 minutes, the switcher should be connected to a system that simultaneously activates an audio alarm and displays the appropriate picture.

Power supply

If the CCTV system is required to function during periods of primary supply failure (normally 240 V mains) then all components must be designed to work from standby battery supplies (normally 12 or 24 V), or from a standby generator supply. Also note that the cameras must also perform effectively under emergency lighting conditions.

Power supply

If the CCTV system is required to function during periods of power supply failure, all components must be designed to work from standby battery supplies (usually 12 or 24 volt) or from a standby generator supply.

The cameras must also perform effectively under emergency lighting conditions

Acceptance testing

It should be standard procedure for all parts of a CCTV system to be tested before handover to a client. Common faults that are often passed on to a client are as follows:

- The subject is too small
- The images of moving subjects are blurred and contain no detail
- There is insufficient light on the subject
- The image is out of focus
- The target is not seen clearly or is not in view for long enough

Maintenance

An effective maintenance programme – covering preventative planned maintenance and emergency repairs – should be put in place to ensure continued effective operation of the system.