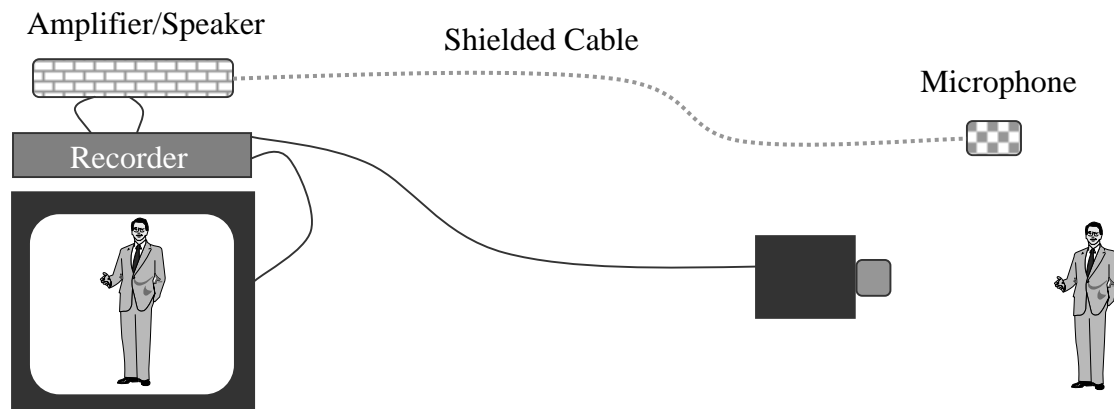


Audio Surveillance

Audio surveillance is recording and/or monitoring audio in addition to video on a CCTV system. Audio can be a useful tool in prosecution as it can be used to prove intent.



Audio Surveillance Components

Audio surveillance requires three components: microphone, amplifier, and speaker. The microphone picks up sounds to be used by the audio surveillance system. The microphones used for audio surveillance are usually omni-directional, meaning they pick up sound in all directions from the microphone, and typically have a range of 15 feet. Some microphones have a built in pre-amplifier, which boosts the microphone signal and allows it to be run longer distances.

The amplifier boosts the level of the sounds recorded by the microphone to a level that can be heard. The connection from the amplifier to the microphone should be run using shielded cable. The output of the amplifier is connected to a speaker. If a monitor with a built in amplifier and

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speaker are used be sure to provide separate power for the microphone.

The speaker and amplifier may be integrated into one unit, commonly called a base station. Base stations usually have connections for sending the signal to the VCR and amplifying signals played back from the VCR. Additionally, the base station also provides power to the microphone.



Microphone

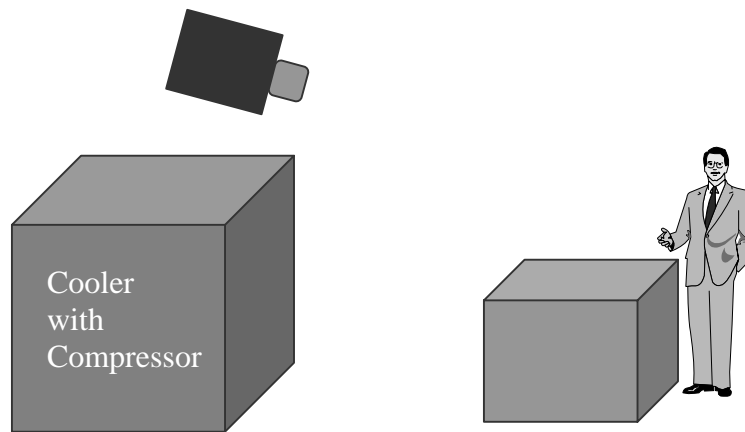


Amplifier/Speaker (Base Station)

Microphone Location

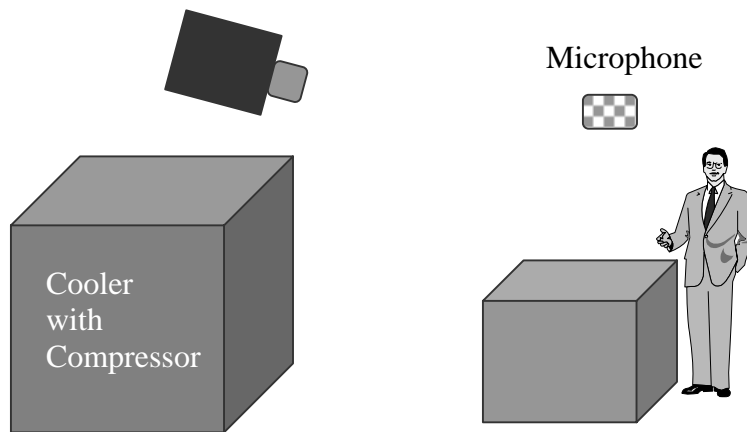
The best location for a microphone is as close to the action as possible and as far from noise sources as possible. Avoid noise sources such as air vents and refrigeration units. The constant noise from these will be picked up by the microphone and become part of your audio signal. If the noise source is loud enough it could even drown out the conversations you are trying to record. Some cameras have built in microphones, but, unfortunately, the best place for the camera is not always the best place for the microphone. Separate microphones give the designer and installer more flexibility.

Camera With Microphone



Microphone Built Into Camera – Noise from cooler drowns out conversations. Microphone is closer to cooler than to subject, bulk of audio signal is compressor noise.

Camera



Separate Microphone – Camera over cooler (best location for camera), microphone over subject (best location for microphone). Bulk of signal is subject's voice.

Recording Audio

Most industrial VCRs have an audio input. The input is typically line level, so a microphone with a pre-amplifier (built in or separate) is required. Audio can be recorded in time lapse modes up to 24 hours, but the shorter the recording mode the better quality the audio. 24 hour “real time” VCRs give the best results due to the higher sampling rate. Audio is recorded as single signal, so if multiple microphones are used a switching device must be used to switch audio signals.

Some DVRs can record audio also. DVRs are available that can record a single channel and multiple channels of audio. The audio is usually recorded as a separate file from the video in the DVRs, and the two files can be played back simultaneously. Unlike video files, audio files are typically uncompressed. Audio recording can increase hard drive space use significantly.

Is Audio Recording Legal?

Federal Regulations, United States Code, Title 18, Section 2510(2) states in part: “ ‘oral communications’ means any oral communication uttered by a person exhibiting an expectation that such communication is not subject to interception under circumstances justifying such expectation...” The meaning of this code is subject to interpretation by your local civil authorities. Some municipalities may even have their own laws regarding audio recording. The short answer is check with your attorney. If you are providing a customer with audio

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recording *conspicuously* post warning signs stating that audio recording is being conducted (these signs are usually available from audio surveillance manufacturers).

This document is part of a complete book entitled:
CCTV System Design & Installation

By Charles Aulner and Bryan McLane
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