Introduction

Camera Technology Guide

Investing in a video surveillance system is a smart move. You have many assets to protect so you need to make sure your security system does what you want it to do. Don't run the risk of something happening and then discover the video has not been captured properly.

Selecting the right cameras for your video surveillance system is critical to the success of your system. First, you need to determine what you want the camera to capture for you. Here are some things to consider:

Do you want to see **a scene** and know if something is happening?

Do you want to see **an event** and determine exactly what is happening?

Do you want to see **the individual** and determine exactly who is involved?

Your answers to these questions will begin to affect the type of cameras you need. Once you can answer these questions, use the rest of this guide to understand other factors when selecting the right camera.

You are most interested in your security system after an event occurs. Be confident knowing your security needs are met and you are getting the most out of your security investment by having the correct cameras in place.

Camera Type

You will need to determine what type of camera you want.

Here are some questions to ask yourself:

- Will your cameras be used indoors or out?
- Should it be a visual deterrent or discreet?
- Is there a particular look you prefer?

There are numerous camera types to consider for indoors and out—from PTZs, box cameras, mini-domes and bullets.

PTZ

Pan/tilt/zoom cameras are very versatile. PTZ cameras can pan (move left and right), tilt (move up and down), and zoom in or out. Additionally, PTZ cameras can rotate 360 degrees to view an object directly below them. Indoor and outdoor options are available.

Box

Box cameras are comprised of the camera body, lens and power supply. For indoor use, a mount bracket is required for installation. For outdoor use, a housing is required.

Mini-Dome

Dome cameras are half spherical-shaped cameras. These cameras are usually used when discreet applications are needed. They can be vandal resistant, and indoor and outdoor options are available.

Bullet

Bullet cameras are stylish with a bullet-like shape. Some come with infrared lighting, and they can be used indoors or out.

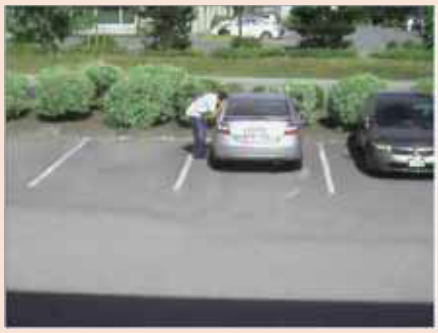
Field of View

The field of view is a measure of how large an area the camera is capable of viewing. The focal length of the lens affects the field of view.

A shorter focal length lens captures more of the scene and therefore displays a larger field of view. Conversely, a longer lens magnifies the scene more, thereby decreasing the field of view.

How large of an area do you want to view with the camera?

Below are examples of how lens choices affect the field of view. Use these examples to help you decide what field of view your application requires.

Focal Length	Field of View	Focal Length	Field of View
10 mm		12 mm	
22 mm		50 mm	

Resolution

Another important consideration in video cameras is resolution. Resolution is the measure of noticeable detail that you see in an image. The higher the resolution, the better the definition, clarity and quality of the picture. Lower-resolution cameras produce images with less detail.

A high resolution camera could capture the detail of a person's face or a license plate number from a wide area. The wider the area you want to view, the more resolution you will need in order to see all the detail. If you want to monitor a smaller area and do not need to see a detailed view, a camera with lesser resolution might do. Keep in mind that higher resolution images also mean larger files sizes, which will take up more storage space on your DVR.

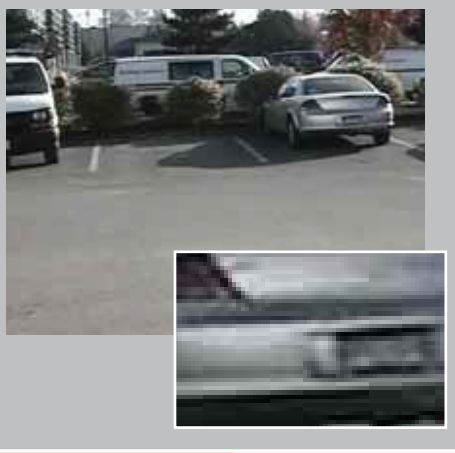
How much image clarity and detail do you require?

Below, you can compare the various resolutions and the level of detail when zoomed in on the license plate.

480 TVL

540 TVL

VGA



720p High Definition

3 Megapixel

Technology for Lighting Issues

Because light is vital for producing a quality image, it is essential to understand your lighting conditions prior to selecting a camera. How much light is available? The amount of light available will determine the amount of light required by your camera in order for it to produce usable video.

There are a variety of technologies available that will ensure you capture usable video regardless of the lighting conditions:

- Day/Night
- IR Illumination
- Digital Noise Reduction
- Digital Slow Shutter

Day/Night

True Day/Night cameras have a movable IR filter. During daytime performance, the IR filter is in place to block all the IR light, creating a nice color image. At night, when the amount of light decreases, the IR filter is replaced with a clear glass filter that allows all available visible and IR light to reach the sensor and be recorded. As a result, you get color images captured during the day and clear black and white images at night.

Night image with no Day/Night

Night image with Day/Night

IR Illumination

Artificial IR illumination can be provided by IR Light Emitting Diodes (LEDs) to augment the naturally occurring light in the scene. If IR LEDs are used, when the ambient light drops below a defined threshold, the IR LEDs turn on, the mechanical IR cut filter within the camera switches, and the camera changes from color to black and white. Perfect color images are captured by day and clear black and white images at night.

Night image with no IR

Night image with IR

Technology for Lighting Issues

Digital Noise Reduction

Digital Noise Reduction (DNR) removes noise artifacts, improving the performance of motion detection and typically giving end users the ability to record for longer periods using digital or network video recorders.

Digital Noise Reduction OFF

Digital Noise Reduction ON

Digital Slow Shutter

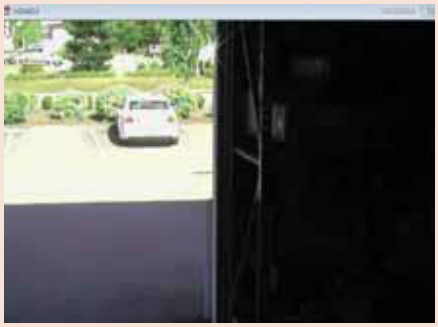
Digital Slow Shutter (DSS) technology improves the light sensitivity of the camera and extends its usable range. This allows a brighter image to be obtained with minimal motion blurring.

Digital Slow Shutter OFF

Digital Slow Shutter ON

Wide Dynamic Range

Wide Dynamic Range (WDR) technology allows end users to capture all the details in a scene, whether those details are partially obscured by low light or distorted by strong backlighting. With WDR, you get clear images when there are both very bright and very dark areas simultaneously in the field of view of the camera.



Wide Dynamic OFF

Wide Dynamic ON

Contact your local ADI representative for additional support in selecting the right cameras for your applications.

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