

# CCTV BASICS

YOUR GUIDE TO CCTV SECURITY SURVEILLANCE



## CAMERAS

The best indoor and outdoor cameras to suit your application

## DVRS

Resolution, frame rate, HDD space and must have features.

## CABLES

Video and power cables to get you connected.

CCTV Central

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## SELECTING THE RIGHT DVR

### NUMBER OF CHANNELS

When selecting a DVR the main consideration is the number of inputs (cameras) that can be connected and recorded. DVR either come in 4 Channel, 8 Channel or 16 Channel. Most also come with the ability to record audio from a microphone as well.

### RECORDING RESOLUTION

Quality is also important because if your recorded video is not clearly captured it is useless when trying to identify identifying characteristics such as people's faces. Record quality is made up of two components the resolution and the frame rate. Resolution is how many pixels (px) of video is recorded – the more pixels the better the detail the video recorded has. There are 6 main categories of resolution. See the table below for details.

Name	Pixels (height x width)
D1	704 x 476
4CIF	704 x 576
2CIF	704 x 288
DCIF	528 x 384
CIF	352 x 288
QCIF	176 x 144

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## SELECTING THE RIGHT DVR

### RECORDING FRAME RATE

Frame Rate is how many frames per second are recorded. The human eye can see 25 FPS (Frames Per Second). If the video is recorded at 25 FPS then it will play smoothly just like you are watching TV. If you lower the frame rate then the video becomes less smooth and similarly to the movements that a robot would make. A 4 channel 100 FPS DVR will divide the 100 FPS between the 4 channels which is 25 FPS per channel – this is known as real-time. It is not recommended to record all your video at 25 FPS as this will take up more storage space, an alternative is to record at a lower frame rate and set motion detection or an alarm sensor to trigger the higher frame rate recording when an event occurs.

### NUMBER OF DAYS CAPTURED – HDD SIZE

Just like a DVD or a VHS video tape there is a certain amount of video that can be recorded before you run out. Most DVRs have a recycle mode so that when it runs out of space it deletes the oldest recording and writes the new video there. The bigger the hard disk drive (HDD) that the DVR has the more space it has and there for the more days you will get recorded. The minimum number of days that we recommend to be recorded is seven (one week)

### OTHER DVR FEATURES

Depending on your individual requirements you should also consider the following features when purchasing your DVR.

- ✓ Motion Detection – Detects when motion is detected and start recording at a higher frame rate and email an alarm notification
- ✓ Network – Can you view live or recorded video from the DVR from within your LAN (local area network) or via the Internet?
- ✓ Mobile Devices – Can you view the live or recorded video from your mobile device such as an iPhone or Windows Mobile Device?
- ✓ PTZ Support – Control your PTZ cameras without the need for a PTZ Controller

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## SELECTING THE RIGHT CAMERAS

### NIGHT VISION

Some cameras come with IR (infra-red) illuminators that emit a bright light during the night that is not visible to the human eye. Cameras with IR will allow you to see in complete darkness.

### INTERNAL / EXTERNAL

Depending on where you are going to place your camera either indoors protected from the elements or outside will determine whether you need an internal or external camera. Internal cameras usually are contained within a plastic housing where as an external camera is housed in a weather resistant aluminum casing.

### PTZ (PAN TILT ZOOM)

Some cameras have PTZ functionality that allows you to control moving the camera left to right (pan) up and down (tilt) and to zoom in closer. These cameras usually come with a controller pad that allows you to control the camera movements using a joystick or the camera can be connect to a PTZ compatible DVR where the camera can be controlled using a standard computer mouse.

### TVL (TELEVISION LINES)

TVL is similar to resolution where it depicts how much detail the camera can produce. The more TVL the better.

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## SELECTING THE RIGHT CAMERA LENS

A security camera lens size determines the field of surveillance view that the camera provides. Our fixed security camera lenses range from 2.8mm to 16mm. The larger the size of the lens, the more narrow and zoomed in the field of view is. Most of our fixed lens cameras come standard with a 3.6mm or 6mm lens. A 3.6mm lens is designed to provide an approximate 72 degree field of view. If you need precise adjustment to the angle and field of view for your application, a vari-focal lens camera is recommended so that you can adjust the lens to the exact view that you need.

Here are some sample still photos taken using different lens sizes in a room that is 20 x 20 feet. The security camera is mounted in the corner of the room from a 10 foot ceiling



3-6mm



6mm



12mm



16mm

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## POWERING YOUR DEVICES

Now that you have chosen your DVR and Cameras you now need to think about how you are going to power the devices. DVR are supplied with a power supply that you can connect straight to your power outlet. Cameras do not come with a power supply and this is an extra that you will need to purchase for each individual camera in order for your camera to function. Without the camera having power it will not turn on. Depending on the power requirements of the cameras and the size of your power supply you may be able to use a power distribution cable and run multiple cameras from the single power supply



DC 12V 1.5A  
Ideal for single security cameras



DC 12V 5A  
Ideal for running multiple security cameras



Power distribution cable  
Split the one power supply to power up to five security cameras

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## WHAT CABLES YOU WILL NEED

Each camera that you want to connect to your DVR will physically need to be connected using a Coaxial cable that has a BNC connection. BNC connections are similar to the connection that you might find on your DVD player to connect to your television set but are specific to the CCTV industry, so you may be unlikely to be familiar with them. The BNC connection provides a twist-lock feature where there is no chance of the cable being dislodged from either the DVR end or the Camera end.

As well as a cable for your video you will also need a cable for your power. The power cable is just like a extension lead that connects from your camera to the power outlet.

There is a specific cable that has been designed that has both a Coaxial cable and a power cable in one. Each end of the cable has connectors that make it easy to connect your camera to on end and your DVR and power supply to the other



BNC Extension Cable

Used to connect camera power and video



BNC Connector



DC Power Plug (Male)



DC Power Plug (Female)

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## VIEWING THE VIDEO

Viewing your cameras can be done via a direct connection to the camera or more commonly via a DVR. DVRs will let you view the live cameras and also let you search for recorded video and playback. A standard computer monitor is connected to your DVR via a VGA connector - this is the standard LCD monitor connection.



### 19.5" LED Monitor

Connect directly to your DVR using VGA connector



VGA Connector

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## RECORDING AUDIO

In addition to recording video, another great security method is to record audio. This is perfect for retail where you want to record the audio of a number of different situations that might occur. Once the audio is recorded then you can watch back the video with the matching audio. In order to record audio you first need to make sure that your DVR can record audio. Most DVRs record at least one audio channel. The second step is to connect a powered microphone to your DVR audio input and a power supply and install it where you want to record the audio. The microphone can be connected using a BNC extension cable, however you will need a RCA to BNC converter.



**Indoor Microphone**  
Connect directly to your DVR  
using VGA connector



RCA to BNC Converter



DC Power Plug (Male)

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## SECURITY SIGNAGE

Lastly any good CCTV Security solution needs for its audience to know that they are being recorded, sometimes putting a sign up is all it takes to deter a would be thief. But in case they still decide to act criminal you will have your cameras to view them and the DVR to record what they are doing.

