

COPIIIIIIIII
SECURITY
Professional CCTV



**DESIGNING OR UPGRADING
YOUR SYSTEM**

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DESIGNING OR UPGRADING YOUR SYSTEM

How to design a system that best suits your requirements. Before you start, decide what it is you want the system to do for you and this will help in deciding what type of camera and recording device to use. A basic understanding of electronic equipment inc. cable and connectors will be a useful skill when choosing a new system.

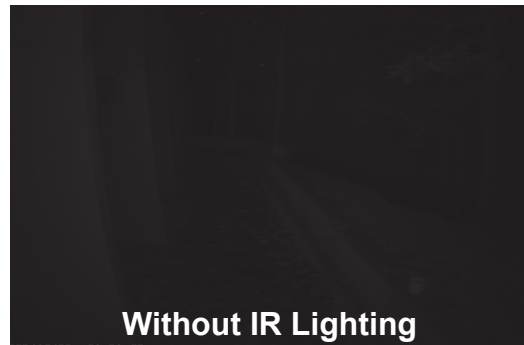
Choosing the camera and lens

You might want to look at a specific area or just look at a general view. In some cases you might want to view a doorway or your car on the driveway to give you the best opportunity to try and identify who and what is taking place in these areas.

You now need to take into consideration the light levels that will exist in the area at night and if they are low then you might consider using IR cameras. These cameras incorporate Infra Red light which is invisible to the human eye but will enable the camera to see in total darkness, but it may be that extra IR lighting is required if the area is greater than the IR coverage of the camera. The IR's will emit a slight red glow when you look directly at them.



With IR Lighting

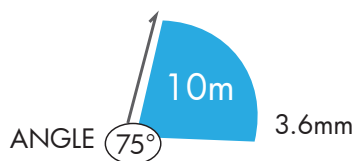


Without IR Lighting

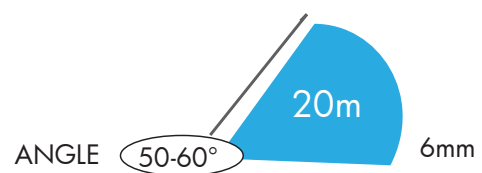
Using OS-830DV camera - Results will vary dependant on ambient light

Once you have decided what areas you want to cover then the next step is to choose the lens option to suit. As a rough guide the following guidelines should apply:-

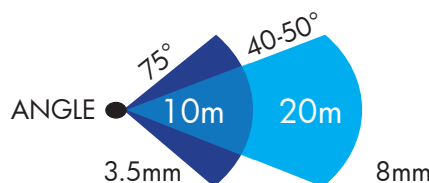
A 3.6mm lens would best suit a distance of upto 10m Sq and this would give a 75 degree angle of view.



A 6mm lens would best cover an area of 20m at an angle of 50-60 degrees



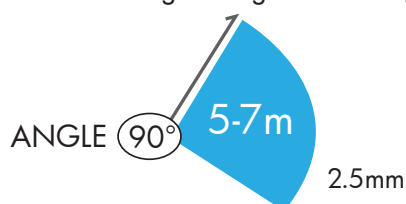
A 3.5 to 8mm lens option is classed as a Vari – Focal lens and this lets you change the field of view by adjusting at the camera and thus the area to be viewed. A Vari-focal lens is a good option when a change of view may be needed at site.



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Wide angle

If a very tight or small area is to be viewed then you might want consider the addition of 2.5mm lens. This is sometimes known as the “fish eye” lens and gives an almost 90 degree angle of coverage with a good viewing distance of 5-7m.



This lens is sold separately and is used in place of the standard lens. Note: can only be used with the OS-300D, OS-300D-H internal domes. It is important to point out that certain criteria will need to be met if the images are to be used as evidence we suggest taking a close look at your local police requirements and the Data Protection Act covering the use of CCTV.

High or Low resolution?

This is the difference between the cameras TVL or TeleVision Lines- usually between 420tvl which is classed as medium res and 520/550 which is classed as High res. There is no doubt about it that High res will give you a much sharper picture but choice depends on a number of issues. The main one is budget and also the importance of the area or subject to be viewed. The better the camera the better the picture and record quality.

Style

Decide whether you want the camera to be high visibility or low key. Some people want to put would be criminal off and some people want to be a bit more subtle about their camera installation. This is very much a personal choice but one that should be made in advance.

Recording

A DVR (Digital Video Recorder) records the individual images that are sent from each camera and these are then stored on the machines hard drive. The unit is very similar to your computer except that the DVR is storing data 24/7. the best way to work out how much hard drive space you require is to work on the fact that a 250gig hdd is good for a say week period and a 500gig hdd is good for a two week period. These times are based on average record settings and a fairly good quality of images per second being recorded. Please note the times will vary depending on settings. Check all your timings after installation. The dvr settings can be changed at time of installation and can be tailored to suit your situation. The DVR will record over the oldest information first on the hard drive and will give continuous recording without the need to touch the unit (regular tests are recommended to ensure your system is working to its optimum performance)

DVR setting

There are three main settings on a DVR that can be changed or altered to best suit the installation:-

Frames per second (fps)

This is how many frames or images will be captured per second per camera. If you work on the fact that 25fps is real time then this should give you an idea of where to set your unit . you have to find a balance between what is an acceptable frame rate and how long the Hard Drive (hdd) will last. The more frames you record the quicker the hard drive will fill up. Depending on the DVR unit used it is possible to set up each individual camera separately .

You must bear in mind that there is a global setting which all the cameras must be divided

For example if the DVR unit is recording at a max frame rate of 50fps and the DVR is a 4 camera system then the max you can have is 12fps per camera. The resolution setting will also play a big part in this calculation

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Resolution

This is the amount of horizontal and vertical lines that are recorded and will determine the quality of image recorded.

This is broken down into three options:

Low- 360 x 288 or CIF

Medium- 720 x 288 or 2CIF- recommended as a good standard setting

High- 720 x 576

Quality

Some DVR units have quality settings and it is recommended that a high or highest setting be used as this will sharpen up the recorded images and does not use too much hard drive space

In Summary

Select your Global record setting 50, 100 or 200 frames per second

Then select your individual frame rates for the cameras (you can't select more than the global amount)

Select your resolution:-

Low- 360 x 288

Medium – 720 x 288

High- 720 x 576

Please note:- DVR units have different specifications and this should be checked before choosing a unit.

Power supplies (PSU)

The DVR (recorder) will come with its own PSU but the camera/s will require separate power supply units

There are three main types of PSU and these are broken down into the following categories:

Plugtop

This is a 12v dc device that plugs directly into a wall socket and has a pre made lead with a 2.1mm jack socket attached. These are easy to use and come in different power outputs with a typical output being 1.2amp @ 12vdc.



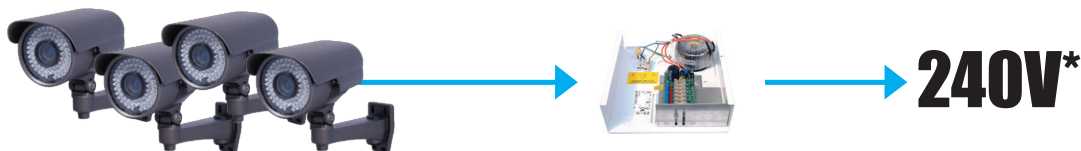
Inline

This PSU has a mains lead that connects into it and a 12vdc lead on the output side. This is a handy device when you are connecting directly into a mains feed (all electrical work should be carried out by a qualified electrician)



Boxed PSU

This PSU is enclosed in a metal box and is wall mounted. They come in various options and have multi outputs to power more than one camera if required. *(All electrical work should be carried out by a qualified electrician)



Choosing the right PSU

Whichever type of PSU you choose you must take the following into account. Each camera will draw or take a certain amount of current (not to be confused with voltage) and this must not exceed the PSU's output. Also it is a wise policy to leave some current spare so not to drive the power supply to hard which may result in reduced life

For example:-

If a camera draws 250ma @12vdc then a 500ma PSU would be recommended

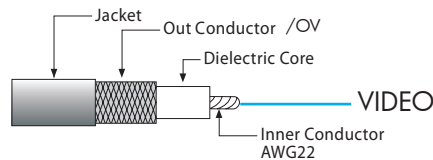
A 1.2 or 1amp 12vdc PSU can power 2 x cameras which each draw 250ma (total 500ma)

Cable and Connectors

To ensure a good quality picture, a specific type of cable and connector must be used when installing a CCTV system. The required cable is a 75ohm coax and this comes in different guises:-

RG59 cable

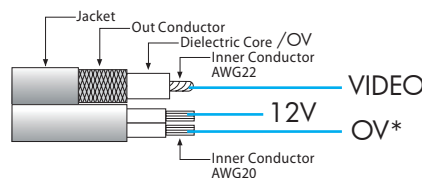
This is typically a black 75ohm coax cable and comes on drums of 100m. this cable requires BNC connectors to be crimped on each (a Crimp tool will be required for this). Run lengths should not exceed 200m in total.



Note:- TV or satellite cable is not suitable

RG59 and Power (sometimes called shotgun cable)

This is an RG59 cable with a two core mains flex bonded to it. It is ideal when you want to run power to the camera on the same run. Again this will require BNC connectors to be crimped on to the RG59.



*OV Should be commoned / joined

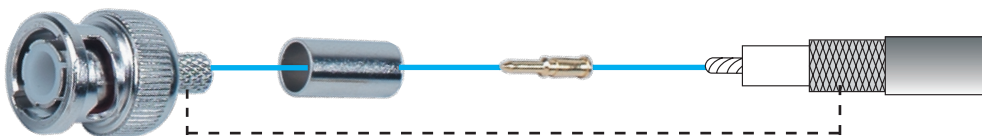
Note:- max run length for 12vdc is 50m to avoid power loss which will result in poor video or no video.

Pre made cables

Sometimes the cable will come complete in a kit and this will use a mini 75ohm coax cable built in.

BNC connectors

The BNC connector is an industry standard connector and is used in all commercial CCTV applications. It is different connector to ones that are used in some observation systems and allows for a professional installation. Proper connections will ensure your system works well and for a prolonged period. All connections must be crimped using correct crimp tool (OS-PRO42)

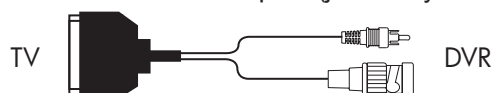


Monitors

Some systems do not require a monitor because an existing TV can be used to view the images. However there are two other types of monitors that can be used in conjunction with the DVR:-

Existing TV

It is possible to make a connection between the DVR unit and your TV. To achieve this you would need to take the monitor output from the DVR and connect it into you TV via the SCART or Phono inputs (just like you would with a camcorder) this can then be viewed via the AV channel.



VGA monitor (computer type monitor)

This monitor uses a VGA signal to display the image and is just the same as a PC monitor. These can be used in conjunction with most DVR's that have a VGA output and should be located local to the DVR unit.

BNC or CCTV Monitor

This uses the DVR's main BNC monitor output to display a signal and is ideal if the monitor is to be sited away from the DVR. RG59 should be used to connect the monitor to the DVR.