

# Tech Tips

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## Video Distribution (Coaxial Cable and Unshielded Twisted Pair)

### What is a Video Distribution System?

Video distribution systems (VDS) are most commonly used for security and entertainment. When integrated with video cameras and monitors, they can provide secure premises monitoring 24 hours a day, 7 days a week. They can also provide for the distribution of audio/video presentations for education or entertainment purposes in educational, commercial, and industrial environments.

There are several different components used within a video distribution system. The components used in coaxial and UTP video distribution systems incorporate video cameras, display units, a recording device, a controller, and a power supply. The recording device is a necessary component to store data possibly needed for use in finding and prosecuting unwanted intruders and thieves.

### Coaxial Video Distribution System

Because it is the inexpensive choice, coaxial cable is the most popular for video distribution. It provides the highest quality transmission at the lowest cost. The standard coaxial configuration uses a 75 ohm coax cable for optimum performance. It is possible to convert 75 ohm unbalanced coaxial systems to 100 ohm balanced twisted pair systems using a small transformer called a balun.

A balun will convert the 75 ohm (unbalanced) signal to 100 ohm (balanced) for transmission via a 100 Ohm twisted pair cable. However, more components in the transmission line introduce more possible trouble points.

You may need to supply remote power to the camera. Some VDS coaxial installations use RG-59 type cable combined with an 18 AWG twisted pair to supply the power. It is possible to use local power, but when the power goes out, the video transmission goes down. No video, no security.

There are also distance limitations with coaxial cable. To overcome these limitations, it is possible to use a fiber interface (or media converter) to increase the distance. Again, adding components introduces more possible points of failure.

### UTP Video Distribution System

Another type of VDS uses unshielded twisted pair (UTP) cable instead of coax. In order to get the best performance possible using UTP, you should install Cat 5e or better. UTP is used where digital output is a requirement. Like coaxial cable, UTP allows additional features for security cameras such as tilt/pan/zoom (TPZ) and digital transmission.

Video cameras on a UTP installation may be IP addressable with RJ45 style jacks for digital output. Digital output provides high quality monitoring and recording. However, an IP addressable camera requires special test equipment such as a laptop and special software to troubleshoot.

As with coax, there are also distance limitations with UTP cable. You can install a fiber interface to increase the distance of the transmission. You may need only single fiber, 62.5 um, multimode fiber optic cable for monitoring and recording.

SUMMARY COMPARISON

Category	UTP	Coaxial
<b>Cost</b>	Low	Medium
<b>Wiring Management</b>	Excellent	Excellent
<b>EMI/RFI Immunity</b>	Good	Good
<b>Bandwidth</b>	Medium	High
<b>Picture/Signal Quality</b>	Good	Good
<b>Baseband Video</b>	1 Channel 365-457 m	1 Channel 170-365 m
<b>Broadband/Distance</b>	28-77 Channel 60-100 m	60-80+ Channel 45-120 m

**Additional Considerations for a Video Distribution System**

If you are considering a video distribution system for your residential, educational, commercial, or industrial environment, there are two things you should keep in mind.

- **Quality of the Video** - What level of quality do you want your video monitoring and recording to provide? If the quality is bad, the system may be meaningless. If you cannot identify individuals or objects, what good is the video?
- **Simplicity of the Configuration** - More components means more points of failure... and more effort to troubleshoot. Corporate Office



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