

CHOOSING THE LINKING VIDEO CABLE OVERVIEW

There are two factors that govern the selection of cable: the location of cable runs either indoor or outdoor, and the maximum length of the individual cable runs.

Video coaxial cable is designed to transmit maximum signaling energy from a 75 ohm source to a 75 ohm load with minimum signal loss. Excessive signal loss and reflection occurs if cable rated for other than 75 ohms is used. Cable characteristics are determined by a number of factors (core material, dielectric material and shield construction. Among others) and must be carefully matched to the specific application. Moreover, the transmission characteristics of the cable will be influenced by the physical environment through which the cable is run and the method of installation.

Use only high quality cable and be careful to match the cable to the environment (indoor or outdoor). Solid core, bare-copper conductor is best suited to video applications, except where flexing occurs. In locations where the cable must be continuously flexed (i.e., when used with scanners or pan/tilts), use cable intended for such movement. This cable will have a stranded wire core. Use only cable with pure copper stranding. **Do not** use cable with copper-plated steel stranding because it does not transmit effectively in the frequency range used in CCTV.

The preferred dielectric material is foam polyethylene. Foam polyethylene has better electrical characteristics and offers the best performance over solid polyethylene, but it is more vulnerable to moisture. Use cable with solid polyethylene dielectric in applications subject to moisture.

In the average CCTV installation, with cable lengths of less than 750 feet, RG59/U cable is a good choice. Having an outside dimension of approximately 0.25 inches, it comes in 500- and 1,000-foot rolls.

For short cable runs, use RG59/U with a 22-gauge center conductor, which has a DC resistance of about 55 ohms per 1,000 feet. For longer runs, the 20-gauge variety which has a DC resistance of approximately 10 ohms per 1,000 feet will work well. In either case, cables with polyurethane or polyethylene as the dielectric material are readily available.

For installations requiring cable runs between 800 and 1,500 feet, RG6/U is best. Having the same electrical characteristics as RG59/U, its outer dimension also is about equal to that of RG59/U. RG6/U comes in 500-, 1000- and 2000-foot spools, and it may be obtained in a variety of dielectric and outer-jacket materials. Due to its large-diameter center conductor of about 18 gauge, RG6/U has a DC resistance of approximately 8 ohms per 1,000 feet and can deliver a signal farther than RG59/U.

Use RG11/U to exceed the capability of RG6/U. Once again, the electrical characteristics of this cable are basically the same as the others. The center conductor can be ordered in 14- or 18-gauge sizes, producing a DC resistance of approximately 3-8 ohms per 1,000 feet. Being the largest of the three cables at 0.405 inches, it is more difficult to handle and to install. RG11/U cable usually is delivered in 500-, 1000- and 2000-foot spools.

Because of special applications, variations of RG59/U, RG6/U and RG11/U frequently are introduced by manufacturers. Due to changes in fire and safety regulations throughout the country, Teflon and other fire-retardant materials are becoming more popular as outer-jacket and dielectric materials. Used for video as well as other types of cables, in a fire these materials do not give off the same poisonous fumes as PVC-type cables, and therefore, are considered safer.

For underground applications, direct burial cables, made specifically for that purpose are recommended. The outer-jacket of this type of cable contains moisture-resisting and other materials that protect the cable, allowing it to be placed directly into a trench.