What is Coaxial Cabling?
A coaxial cable is a two conductor electrical cable consisting of a center conductor and an outer conductor with an insulating spacer between the two.

How is Coaxial Cabling used?
Primarily, coaxial cables are used for the transmission of Radio Frequency energy. The system offers tight control over electrical impedance. This yields excellent performance at high frequencies and superior EMI control/shielding.

Where is Coaxial Cabling used?
A broad range of applications exist for coaxial cabling. The two primary impedance values of 50 and 75 Ohms determine specific applications with 50 Ohms primarily used in data signal applications and 75 Ohms used in video signal applications.

### Common Applications for Coaxial Cable Assemblies

<table>
<thead>
<tr>
<th>Entertainment Systems</th>
<th>GPS</th>
<th>Video Systems</th>
<th>Telecom</th>
<th>WAN/LAN</th>
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<tr>
<td>Coaxial cable assemblies are used extensively to connect a wide variety of home and commercial entertainment products. Entertainment equipment such as monitors, TVs, cameras, recording equipment and broadcast equipment are interconnected using coaxial cables.</td>
<td>Global Positioning Systems utilize coaxial cable for connections between receiving antennas and other related equipment.</td>
<td>The transmission of a video signal from a video camera to a display monitor is typically through coaxial cable.</td>
<td>The infrastructure of most telecommunication systems relies heavily on coaxial cabling. Cell towers, communications equipment and base station facilities are typical examples of coaxial cable interconnection applications.</td>
<td>Wide Area Networks and Local Area Networks often utilize coaxial cable for equipment interconnections. In addition, reverse polarized connectors are found on many wireless antenna connections.</td>
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<td><strong>Common cable types:</strong> 75Ω - RG6 or RG59</td>
<td><strong>Common connectors:</strong> BNC, F and SMA</td>
<td><strong>Common cable types:</strong> 75Ω - RG59, RG59A/U, RG59B/U or RG179</td>
<td><strong>Common cable types:</strong> 50Ω - RG58, RG223 and RG213</td>
<td><strong>Common connectors:</strong> BNC, TNC and Type N</td>
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### Coaxial Cabling Terms

- **Frequency:** Number of times a periodic action occurs in one second. Measured in Hertz.
- **Impedance:** The opposition to the flow of alternating or varying current. Measured in Ohms. Two common impedance values are 50 Ohms used primarily for data and 75 Ohms used to transmit video signals.
- **Insertion Loss:** A measurement of attenuation determined by the system output before and after the connection of a cable and/or device.
- **Jack:** The female connector usually containing a center socket.
- **Microwave Frequencies:** Microwave frequencies range from Ultra-High Frequency (UHF) .3-3 GHz, Super High Frequency (SHF) 3-30 GHz to Extremely High Frequency (EHF) 30-300 GHz.
- **MIL-C-17:** MIL-C-17 is a specification document that has been used since the 1940s to standardize the physical and electrical characteristics of coaxial cables. There is no longer any control of RG specifications so cables may perform differently than the cables that adhere to MIL-C-17.
- **Plug:** The male connector usually containing a center pin.
- **RF (Radio Frequency):** A frequency band from 3 MHz to 300 GHz. Primarily used for transmission of radio and television signals.
- **RG/U:** A designation that originated with a US Government specification. No longer in effect.
- **Shielding:** Conductive envelope made of wires or metal foil that covers the dielectric and the center conductor.
- **Twinaxial:** An offshoot of coaxial cabling. Two center conductors with one dielectric and braided shielding.
- **Velocity of Propagation (VP):** Usually expressed as a percentage, VP is the transmission speed of electrical energy in a determined length of cable compared to the speed of light.
- **VSWR (Voltage Standing Wave Ratio):** The ratio of the maximum effective voltage to the minimum effective voltage measured along a RF transmission line. This value generally increases with frequency and higher values are not desirable.