

**Keywords:**

MOCSY™7  
Coaxial Cable  
CATV  
Satellite  
Center Conductor  
Foam PE Insulation  
Outer Conductor  
Jacket  
Series 59, 6, 11



## MOCSY™7 75 Ohm Coaxial Cable

### Applications

These cables are typically used for:

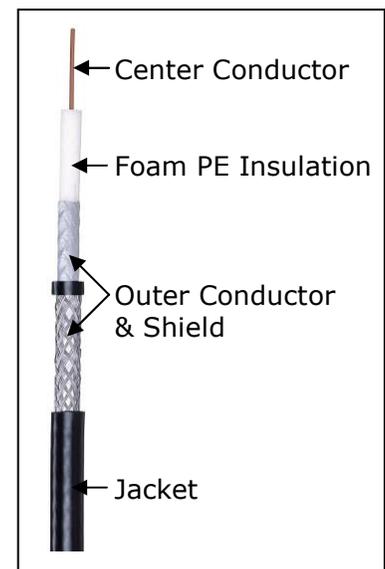
- CATV aerial drops from a distribution feeder cable (hardline) tap to the home
- CATV underground drops from a distribution feeder cable (hardline) tap to the home
- CATV house wrap outside and inside the home wiring to TV/modem/phone
- Satellite antenna to home TV wiring
- Off air antenna to home TV wiring

Broadband systems today provide much more than analog TV signals; they can offer rich media content that includes video, phone and internet services. PCT Multimedia Over Cable System 75 Ohm coaxial cable or MOCSY™7 cable is designed to provide superior performance for all of these applications.

### Construction

A coaxial cable consists of a round inner conductor and a cylindrical outer conductor (or shield) separated by an insulator (or dielectric). The two conductors share the same central axis, hence the term coaxial. A jacket is added to protect the cable from damage and a steel support wire, or messenger, is sometimes added for aerial applications.

**Center conductor** - carries signals / power and is usually copper covered steel (CCS), but may be solid copper. At CATV frequencies (5-1002 MHz), the radio frequency (R.F.) signal travels on the surface of the wire, so only the surface must be highly conductive. CCS offers the advantages of lighter weight, lower cost, and higher strength than solid copper. Solid copper conductor is used when d.c. power is being carried long distances, for instance in a satellite dish application to power the Low Noise Block downconverter (LNB) or in baseband video applications where low frequency digital signals are used. The only metal more conductive than copper is silver and sometimes silver metal is electroplated over the CCS for critical headend applications. The silver reduces attenuation slightly and protects the copper surface from oxidation, but at a much higher price.



**Foam PE insulation** - keeps the two conductors separated and blocks moisture from entering the cable. Originally coaxial cables were made with solid plastic insulation, but it was found that attenuation could be reduced by foaming the insulation. PCT uses nitrogen gas injected foaming for low attenuation and a thin layer of glue to bond the foam to the center conductor. Polyethylene (PE) is made from petroleum which burns easily; so for plenum applications where the cable must not burn, foam FEP insulation is used. PCT does not currently have the capability to make FEP foam.

**Outer conductor** - performs the dual purpose of conducting the R.F. signal and shielding the cable. Shielding is bi-directional keeping the CATV or satellite signal from leaking out (egress) and keeping electrical noise from leaking into the cable system (ingress). Braided drop cables use multiple layers of metals to achieve the desired level of shielding. In contact with the foam is an aluminum foil laminate tape and over that is an aluminum wire braid. This two layer construction or bi-shield can be improved by adding another foil tape layer creating the tri-shield construction. Finally, a second braid can be added for the quad-shield construction (foil/braid/foil/braid). The inner foil is glued to the foam PE insulation so that it will not push back and bunch up when a connector is pushed on the cable.

**Jacket** - protects the cable from damage during installation and from the effects of weather or fire. Jacket grade polyvinylchloride (PVC) is used because it has good flexibility, relatively low cost and resistance to abrasion, chemicals, sunlight (UV) and flame. PVC is a naturally white and rigid material; so for jackets plasticizers are added to make it flexible and dyes are added for color. Flame retardants can be added when even more flame resistance is needed. For direct burial applications, a polyethylene (PE) jacket is used. This material has increased cut through resistance to prevent damage during burial and abuse from rocks and the occasional shovel. It has no resistance to fire, however, so it should never be used inside a building.

**Messenger** - supporting wire is attached to the side of a coaxial cable with its own jacket and is separated from the coax with a thin web of jacket material. CATV drop wire is not self supporting for long spans so a strong galvanized steel messenger wire is typically added to support the drop cable from the telephone pole to the home. Satellite applications use the same term, messenger wire, for a CCS grounding wire that grounds the dish and LNB.

### ***Cable Series***

The sizes of the cables are based roughly upon the Military Radio Grade (RG) designation. The original RG-59, RG-6 and RG-11 cables did not use foam insulation. Manufacturers modified the designs to the point that CATV cables are not compliant with the RG specifications. The Society of Cable Telecommunications Engineers (SCTE) adopted the term Series to describe this family relationship. Series 59, Series 6 and Series 11 are official designations for standard CATV cables.