

Fiber Optic Cables!

A. The selection of connectors include ST, SC, LC, ESCON and others.

- i. **ST connectors** use a plug and socket that is locked in place with a half-twist bayonet lock.
- ii. **SC connectors** feature a push-pull latching system providing speedy insertion and removal along with a positive connection.
- iii. **LC connectors** are smaller versions of the SC connectors.
- iv. **ESCON connectors** have two 2.55 mm ceramic ferrules and a robust strain relief design.



Figure 1. The above images are examples of ST, SC, LC and ESCON fiber optic connectors.

B. Fiber Requirement: Simplex or Duplex?

- i. In configuring your backup switch, a determination on the fiber type, simplex or duplex needs to be made.
 2. **Simplex fiber optic cable** consists of a single fiber, and is primarily used in applications that only require one-way data transmission. Simplex fiber is available in both singlemode and multimode. Simplex means the cable has only one thread of fiber optic glass inside the single core and one single outer jacket.
 3. **Duplex cable** consists of two fibers, usually in a zipcord (side-by-side) style. Duplex multimode or single mode fiber optic cables are used for applications that require simultaneous, bidirectional data transfer. Workstations, fiber switches and servers, fiber modems, and similar hardware usually require duplex cable. Duplex fiber is available in singlemode and multimode. Duplex fiber cable can be regarded as two simplex cables having their jackets joined by a jacket material. Some duplex fiber optic cables have clips on the two fiber optic connectors at each side of the cable to combine the two connectors together.

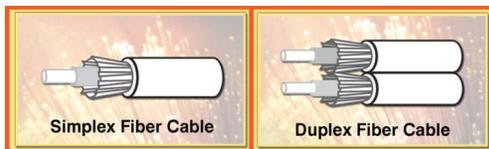


Figure 2. Demonstrates the difference between simplex and duplex fiber optic cables.

C. Mode: Multimode or Singlemode?

- i. **Multimode fiber optic cable** has a large diameter core that is much larger than the wavelength of light transmitted, and therefore has multiple pathways of light. Several wavelengths of light may be used in the fiber core. Multimode optical cable is most commonly used for shorter distances, such as a building or a campus. Typical multimode links have data rates of 10 Mbit/s to 10 Gbit/s over link lengths of up to 600 meters.
- ii. **Singlemode fiber optic cable** has a small core and only one pathway of light. With only a single wavelength of light passing through its core, singlemode realigns the light toward the center of the core instead of simply bouncing it off the edge of the core as with multimode. The glass fiber diameter is usually 8.3 to 10 microns. Single mode fiber provides a higher transmission rate and up to 50 times more distance than multimode.



Figure 3A.
Top row: demonstrates ST, SC, and LC multimode fiber optic cables. (orange jackets)

Figure 3B.
Bottom Row: demonstrates ST, SC, and LC singlemode fiber optic cables. (yellow jackets)