

How much fiber do you need?

- Fiber optic cables are often custom cut to match required lengths for each cable run, or you can order a reel matching your total length and cut segments yourself. It's advisable to include a safety buffer when ordering, with an additional 10% being common practice, despite careful measurement of termination point distances.

How many strands of fiber do you need?

- Fiber optic cables commonly come in multiples of 2 fiber increments, such as 6, 12, 24, 48, 72 and 144 fiber configurations.
- Design engineers reserve spare fibers for potential breaks and future upgrades to the system.
- Ethernet Applications may need additional fibers (such as 1 gigabit to 10 gigabit, may require additional fibers)
- Anticipating future growth during cable installation proves cost-effective.
- Non-standard fiber counts can be manufactured to specific minimum quantities, though longer lead times will apply.
- Combining multiple cables, such as a 24-fiber and a 48-fiber cable, instead of using a single 72-fiber cable, can provide quicker access to products and potentially easier installation, depending on cable pathways.

Determine the type of fiber (optical glass) you need.

- Singlemode fiber optic cables** are ideal for high bandwidth and long-distance applications, while multimode cables, also suitable for high bandwidth, are typically used for cable runs under 550 meters. These two types of cables require different electronics. Proterial Cable's standard singlemode glass, known as OS2, offers superior performance.
- Multimode fiber** is offered in various performance levels, beginning with OM1 (62.5 micron core) and advancing to 50 micron core designs like OM2, OM3, and OM4. "OM" stands for Optical Fiber Multimode, while "OS" signifies Optical Fiber Singlemode. It's important to note that due to differences in core size, OM1 fibers cannot be connected to OM2, OM3, or OM4 fibers. Check the optical specifications for each product for more details.

Difference between loose tube vs tight buffered fibers

- Tight buffered** refers to the type of cable in which the fiber strands have an additional layer of material applied to the fiber, similar to insulation around a copper conductor. This layer usually increases the size of the fiber strand from 250 micron to 900 micron. The 900 micron size is the standard size for terminating fibers on a job site.
- Loose tube** refers to cable designs where the fibers are 250 micron in diameter. They are color-coded to differentiate one fiber from another. The small fiber diameter usually permits smaller cable diameters than tight buffered designs. Originally used in high-fiber outside plant cables, loose tube fibers are now used indoors or anywhere where cable pathway space is limited. Termination of loose tubes requires either a fan-out kit or the ability to splice connectors.

In what environment will the fiber optic cable be installed?

Cables constructions are specific to an environment, such as indoor, outdoor or both indoor/outdoor environments.

- Armored constructions offer additional protection, with interlock armoring common for indoor and indoor/outdoor cables, while corrugated armoring is typical for traditional outside plant cables.
- When installing cables indoors or indoors/outdoors, ensure they are labeled with the appropriate NEC rating required for that location, such as OFNP (Optical Fiber Non-conductive Plenum) or OFNR (Optical Fiber Non-conductive Riser). Cables containing metal must be identified with a "C" in the rating, indicating conductive.
- Outdoor cables do not require an NEC rating but must be terminated within 50 feet of entering the building.

Optical Specifications

TIA/EIA-568-C.3
ISO/IEC 11801, 2nd edition
Telcordia GR-409-CORE

Fiber type	Max. Attenuation (dB/km)		Min OFL Bandwidth (MHz-km)		Min EMBc Bandwidth (MHz-km)		Gb Ethernet distance (m)		10 Gb Ethernet distance (m)	
	850nm (MM)	1300nm (MM)	850nm (MM)	1300nm (MM)	850nm (MM)	1300nm (MM)	850nm (MM)	1300nm (MM)	850nm (MM)	1300nm (MM)
OM1	3.5	1.0	200	500	220	N/A	300	550	33	N/A
OM2	3.0	1.0	700	500	950	N/A	750	550	150	N/A
OM3	3.0	1.0	1500	500	2000	N/A	1000	550	300	N/A
OM4	3.0	1.0	3500	500	4700	N/A	1100	550	550	N/A
OM5*	3.0	1.0	3500	500	4700	N/A	1100	550	550	N/A
OS2	1310nm (SM)	1550nm (SM)	1310nm (SM)	1550nm (SM)	1310nm (SM)	1550nm (SM)	1310nm (SM)	1550nm (SM)	1310nm (SM)	1550nm (SM)
	0.5	0.5	N/A	N/A	N/A	N/A	> 25,000	> 40,000	10,000 - 25,000	40,000

