Do you need to choose between single-mode and multi-mode optical fiber? Understanding the differences between the two will help determine what will work best for your facility or OB truck—and potentially save money.

Knowing the specifics about a given installation, including the transmission distance, connector type, data rate to be covered and the overall budget, can help pinpoint what will be most efficient for the particular installation.

### SINGLE-MODE FIBER CONVERTERS OFFER:
- Bandwidth advantages
- One mode of transmission, Nominal Wavelength: 1310 nm
- Elimination of distortion from overlapping light pulses
- Narrow diameter of 8.3 to 10 microns
- Lower signal attenuation
- Higher transmission date rate

### MULTI-MODE FIBER CONVERTERS OFFER:
- Cable flexibility, which is ideal for in-wall installations
- Multiple modes of transmission, Nominal Wavelength: 850 nm
- Diameters of 50, 62.5 and 100 microns
- High bandwidth over medium distances

### HOW THEY WORK
Single-mode fiber has a smaller core, resulting in less light diffraction over long distances. Multi-mode fiber uses a bigger core and uses a longer wavelength of light, resulting in more light diffraction over distance.

### LET'S TALK COST
Single-mode fiber converters are two to four times more expensive than multi-mode because they provide a higher transmission rate and lower signal attenuation over longer distances. Multi-mode fiber cables are more affordable, but longer distances result in signal distortion.

### SPEED
Both can handle 10G speeds.

### COMpatIBILITy
Multi-mode and single mode fiber are not compatible. They cannot be mixed between two endpoints.

### SO, WHICH SHOULD YOU CHOOSE?
Multi-mode is ideal for end user applications that fall within the 700 m (2296 ft) for OM4 and 300 m (984 ft) (OM3) for Multi-Mode—shorter distances. Single-mode is ideal for single channels over long distances—it works well for 50 times more distance than multi-mode.

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**SINGLE-MODE VERSUS MULTI-MODE FIBER CONVERTERS**

To learn more, visit [www.aja.com](http://www.aja.com)