

What is Indoor/Outdoor Cable?

Indoor/outdoor cable, or I/O cable as it is often referred, is like many other terms in the wire and cable industry in that the definition depends on the specifics of the subject in question. In general, "indoor" implies that the cable has at minimum an NEC Fire Resistance Rating so that the cable is not subject to the typical 50-foot indoor length limitation that applies to outside plant (OSP) cables. "Outdoor" generally implies that the construction of the cable is such that it will withstand certain environmental extremes typically only experienced outdoors. Beyond that, the specifics of the design must be examined to determine the suitability of any cable for an application requiring indoor/outdoor performance. Following is some additional information on two of the more common types of indoor/outdoor cable.

Indoor/Outdoor Unshielded Twisted Pair (UTP)

When referencing unshielded twisted pair (UTP) cables, indoor/outdoor is a special designation of cable intended for limited indoor/outdoor use. This cable was designed for the purpose of connecting the Network Interface Device (NID) located on the outside of a building or residence to the inside services, which may be a small telecommunications closet or simply a wall outlet. This cable typically has a minimum NEC Fire Resistance Rating of CMX plus an additional UL rating of "Outdoor". Other fire resistance ratings are available as applications warrant. The materials used in Indoor/Outdoor UTP cables provide better low temperature properties and UV protection than their strictly indoor counterparts.

Indoor/outdoor UTP cable is not intended for typical outdoor applications for which OSP cables are designed. As with most UTP cables, Indoor/Outdoor cables lack a grounding mechanism for handling the electrical surge that can occur from a lightning strike or contact with another power source. This is a safety issue and should not be taken lightly! The NEC and NESC both require that electrically exposed cable be enclosed in a metallic covering that is grounded at each end. They further require that any communication cable entering a building must have the individual conductors terminated in a UL Listed Primary grounding device called a building entrance protector (BEP). This is a safety valve for those occasional instances where the power surge actually makes its way past the shield or conduit and travels along the conductors. Secondary devices of the type used to protect electronic equipment inside a building are not suitable for BEP use and are not allowed by code.

Indoor/Outdoor Optical Fiber Cable

Optical fiber cables classified as indoor/outdoor also have at minimum an NEC Fire Resistance Rating. Like Indoor/outdoor UTP cables, they also utilize materials that provide better temperature properties and UV protection. Some also include additional protection against water ingress. Designs are available in loose-tube and tight-buffered construction and are suitable for all fiber types.

Indoor/outdoor optical fiber cables are generally all-dielectric and thus exempt from the grounding issues inherent to copper conductor cables. The primary advantage of the cable is the ability to transition from the outdoor to indoor environment with the same cable, thus eliminating a splice/connector point.