Using Fiber as an Electrical Isolation Solution

Benefits

- Transparent network insertion through Auto-Negotiation, AutoCross and Link Pass Through.
- 10/100BASE-TX to 100BASE-FX
- Eliminate EMI and RFI issues
- -40° to 75°C operating temperature range for outdoor applications
- DC power
- LIFETIME WARRANTY

Fiber Isolation

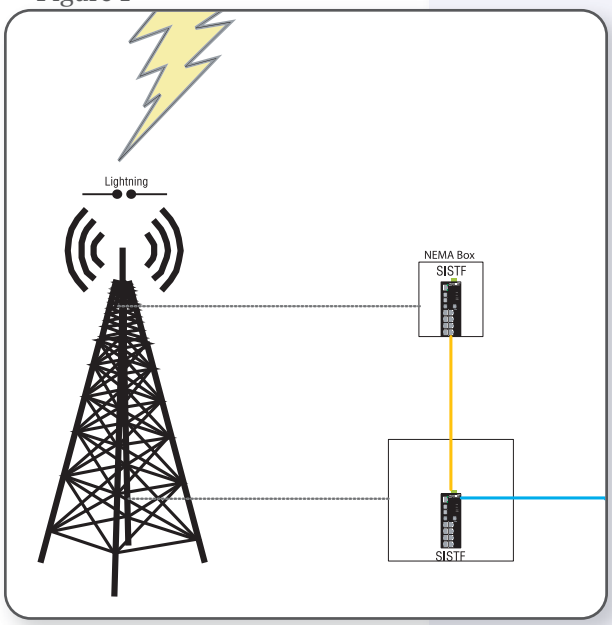
For years, contractors and service providers have been told about the benefits of using fiber to extend networks over long distances. Fiber also offers immunity from electrical interference. Recently, a service provider wished to protect expensive RF equipment at the top of a cell tower from damage whenever a thunderstorm passed through the area. A simple yet effective solution was to insert a pair of media converters at the base and top of the tower (Figure 1).

The copper-to-fiber media converters isolate the equipment at the top of the tower from storm-induced electrical ground noise. Since Transition Networks media converters offer a transparent connection to disparate media, no administrative changes to the network are required when inserting a fiber-optic link; the converters just drop in.

Because the equipment was located at the top of a cell tower, there was no temperature control and only DC voltage available to power the solution. These limitations called for the use of Transition Networks' industrial-rated SISTF101x-111-LRT media converters. The customer installed a 10/100 extended temperature SISTF industrial media converter at the top of the tower and used the -48VDC already available there to power the device. Since the SISTF series media converters are rated for operation between -40° to 75° C temperatures, only an additional low-cost, off-the-shelf NEMA-rated enclosure was all that was needed to complete the outdoor installation. To backhaul the signal over copper another media converter was used at the base of the tower.

For this application the customer used the benefit of fiber, not to extend network distance, but to eliminate grounding potential between the base and top of the cell tower. As the tower and surrounding area continue to be struck by lighting during electrical storms, the expensive routing and Microwave/RF transmission equipment has remained protected--due to fiber isolation--from any potential damage.

Figure 1



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