Technology Overview 3

Optic Fiber Polarization Fluctuation Analyzer

Simple Method of Measurement of Polarization Fluctuation

Even if the light propagating through optic fibers undergoes magnetic fields, pressure, vibration and temperature change, the intensity of the light remains unchanged, thus giving no effect on communications; however, the state of polarization does change considerably.

By utilizing this fluctuation in polarization, it should be possible to apply optic fibers to fields other than communications, such as sensing and monitoring applications. However, ordinary optic fibers exhibit various states of polarization, which have to date made it difficult to measure the amount of fluctuation.

CRIEPI has therefore developed a new method for analyzing the components of polarization to facilitate the measurement of polarization fluctuations in various optic fibers.

Uses of Polarization Fluctuation Analyzer

This compact, portable, and low-cost analyzer can be used not only for routine monitoring of polarization but also for real-time measurement of high-speed polarization fluctuations. Consequently, it can be used for a variety of applications, including the following:

- lightning strike localization systems using OPGW mounted on power lines,
- identification of a particular optic fiber among multiple fibers based on the polarization fluctuation, and
- wide-area monitoring by introduction of signals into existing optic fibers (uncut).