



Low Power Supply Line Insulation Monitor White Paper

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Abstract

Cabled ocean observatories are designed to be deployed for many years. To ensure a long life, it is important to detect and react to faults that may cause damage to the observatory. It is particularly important to monitor ground faults that occur when a normally insulated conductor becomes connected to seawater. If a second fault occurs, or part of an instrument is intentionally referenced to seawater, then current will flow through seawater as well as the intended conductor. This process leads to corrosion which, over time, can be catastrophic for pressure housings. The early detection of ground faults is also important because it is likely part of a growing water ingress problem, which requires remedial action to be planned. The Line Insulation Monitor (LIM) on the Low Power Supply was designed to provide a basic capability to detect ground faults and to determine the best mitigation for any detected ground faults. As designed, the LIM circuit adds only a few additional components to the Low Power Supply, and therefore adds very little cost and space requirements to the subsea equipment. However, more sophisticated circuits with more diagnostic capabilities are possible. This paper discusses strategies for detecting ground faults, the design of the LIM, and guidelines for interpreting the LIM results.

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