

Advanced Remote Monitoring Solutions: Merging High-Frequency Data Logging with Edge Computing for Enhanced Cathodic Protection Analysis

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Recent technological advancements in cathodic protection monitoring have led to the development of next-generation remote monitoring devices that combine the capabilities of traditional Remote Terminal Units with high-frequency data logging features. These innovative devices address the growing challenges in modern infrastructure protection, particularly in environments affected by stray currents and telluric interference. By implementing continuous second-based sampling of critical parameters such as structure potential, coupon polarization, and current density measurements, these systems enable comprehensive analysis of time-variant effects on protected structures.

The integration of edge computing technology represents a significant breakthrough, allowing these devices to process vast amounts of collected data locally and generate condensed daily reports containing essential statistical information, including averages, extremes, and threshold violations. This approach dramatically reduces data transmission requirements while maintaining analytical depth and consent daily data transmission even operating on batteries.

Real field cases will be shown, demonstrating that this combination of high-frequency sampling and daily reporting capabilities significantly simplifies cathodic protection effectiveness assessment, providing unprecedented insight into protection system dynamics. Real-world applications reveal how this technology enables technicians to identify and analyze complex interference patterns and protection issues that were previously difficult to detect, marking a transformative advancement in infrastructure asset protection monitoring.