

**Methods for Estimating States of Electric Point Machines and Track Circuits  
Using Remote Monitoring Data**

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Despite the rapid development of sensing technology and data storing technology for remote monitoring of signaling, stored big data is not utilized effectively. One cause is that the big data contains little or no reproducible data on the failure or malfunction. We have conducted remote monitoring for about one year and simulated the failures of equipment for remote monitoring of electric point machines and track circuits, and have developed methods to estimate their state as a result. The proposed method of electric point machines is characterized by focusing on the peak current and the switching time, and the proposed method of track circuits is characterized by focusing on the harmonic analysis.