

Integrated Intelligent Anti-Misoperation System

SUMMARY

Aligned with smart substation construction requirements, compliant with the autonomous controllable new-generation substation secondary system architecture and information security specifications, and enabled by new technologies (Big Data, Cloud, IoT, Mobile, AI), this solution addresses operation, maintenance and overhaul scenarios. It establishes a new-generation integrated intelligent anti-misoperation system for substations, featuring full anti-misoperation, full business coverage and full process control. Focused on "safety & efficiency" and built around "business collaboration" and "data fusion", it drives improvements in four dimensions: optimized anti-misoperation measures, upgraded management, enhanced business systems, and strengthened innovative applications.



Multi-level Anti-misoperation Interlocking



Real-time Sequence Control Logic Verification

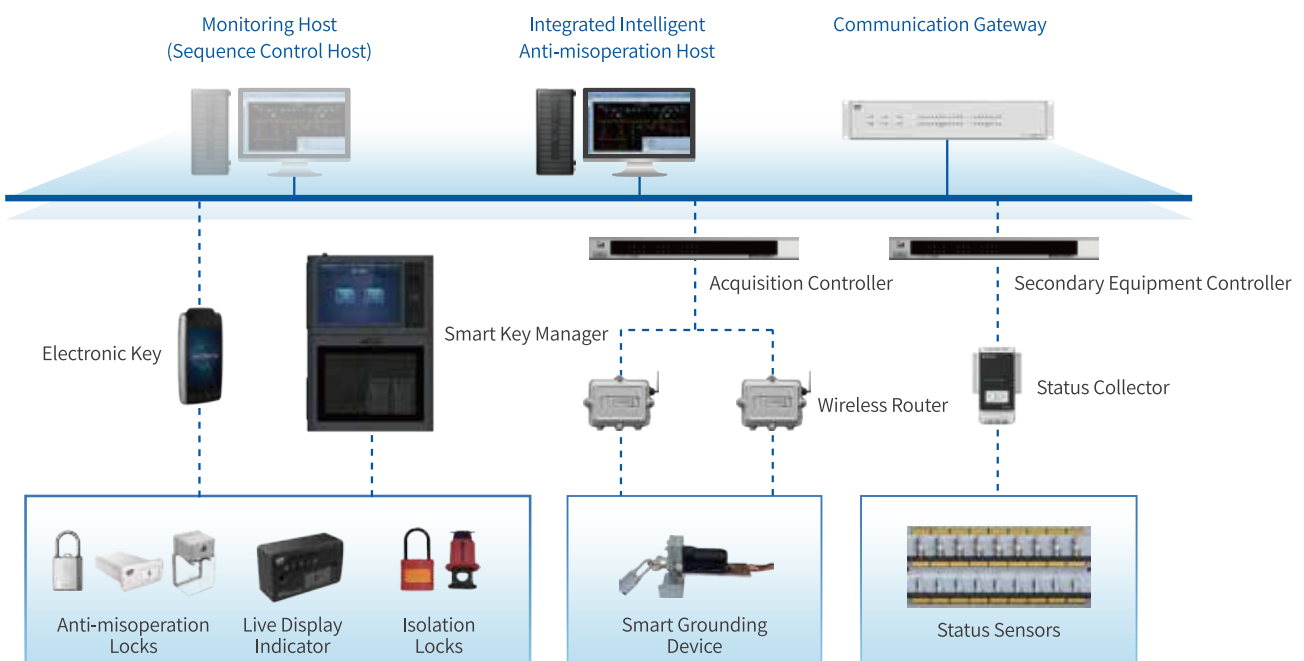


Forced Interlocking



Backup Anti-misoperation Interlocking

NETWORK STRUCTURES



Full Anti-misoperation, Full Business Coverage, Full Process Control

Comprehensive Anti-misoperation Interlocking



It implements three-level anti-misoperation (station, bay and process) covering primary equipment (circuit breakers, disconnectors, etc.) and temporary grounding wires/gates. It also covers all links of substation operation, operation and maintenance. Any single link without antimisoperation function will not disrupt the whole system.

Mandatory Anti-Misoperation Interlocking



This system prevents false tripping from human error, equipment faults or interference via GOOSE-based intelligent interlocking units at the process level, which connect to primary equipment control circuits. It also uses mechanical/electrical locks for manual devices (grounding wires, cabinet doors), live display interlocks for voltage checking, and a wireless grounding wire management system for mandatory interlocking and full-process monitoring.

Independence of Anti-Misoperation Function



The anti-misoperation system operates independently, with no impact on other systems. It maintains full-station anti-misoperation interlocking even if other components fail.

Information Sharing



Achieves substation model information sharing with the monitoring system, enabling zeroconfiguration interaction between the monitoring system and anti-misoperation system.

Anti-Misoperation Interlocking for Sequence Control Operations



It supports anti-misoperation judgment and mandatory interlocking for both on-site and remote sequence control operations, ensuring safe, reliable and efficient execution. It features an emergency stop function to automatically halt operations in case of accidents or abnormalities, enabling operator intervention.

Operation Record Traceability



All GOOSE messages for anti-misoperation operations are logged in a built-in "black box". Special analysis tools enable convenient reading, query and analysis for traceability.

