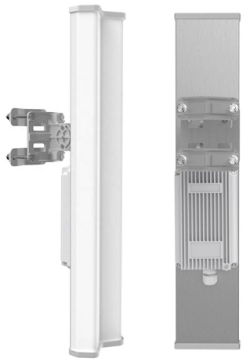
Communication Protocol for Relay Protection



AI Overview

Relay protection systems use protocols such as RS232, RS485, Modbus, IEC 60870-5-103/104, and IEC 61850 to ensure reliable, real-time communication between relays, SCADA, and substation automation devices.

Legacy Serial Protocols

RS232 and RS485 are basic serial communication protocols used for point-to-point or multi-device relay communication. RS232 supports simplex, half-duplex, or full-duplex communication between two devices over a single twisted pair, while RS485 allows multiple relays (up to 32) to communicate in half-duplex mode using a master-slave architecture. In RS485, the master initiates communication, and slave relays respond only when polled, either in unicast or broadcast mode, making it suitable for local relay control and monitoring .

Industrial and Protection-Specific Protocols

Modbus is a simple, open industrial protocol originally developed for PLCs and sensors. It is widely used for basic data exchange between relays and monitoring systems but lacks real-time performance for critical protection functions . IEC 60870-5-103 is an IEC standard designed specifically for communication between protection relays and local monitoring systems. It supports uploading trip signals, fault records, and relay settings, making it suitable for microprocessor-based protection devices . IEC 60870-5-104 extends IEC 103 for TCP/IP networks, enabling...

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Communication

The protection relay supports a range of communication protocols including IEC 61850, IEC 61850-9-2 LE, IEC 60870-5-103,

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Modbus vs IEC 103 vs IEC 104 vs IEC 61850 | communication

Design Objective: Communication between protection relays and monitoring systems (e.g., fault recording, setting

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