

AQ-L359 Line protection IED



AQ-L359 is a line protection IED with line differential and full scheme distance protection for transmission and sub-transmission line protection applications. It integrates a full range of line protection functions as well as a variety of additional functions for control, measurement, monitoring and communications.

Highlights

- Line differential protection
- Distance protection with polygon or MHO characteristics
- Impedance measuring in six separate loops for phase or earth faults
- Parallel line zero sequence current compensation
- Load encroachment and power swing block characteristics
- Zone 1 subcycle trip time

Technical Data

PROTECTION FUNCTIONS

Three-phase instantaneous/time overcurrent ($I>$; 50/51)

Residual instantaneous/time overcurrent ($I0>$; 50N/51N)

Directional three-phase overcurrent ($I_{dir}>$; 67)

Directional residual overcurrent ($I0_{dir}>$; 67N/32N)

Line differential (87L)

Teleprotection (85)

Out-of-step protection

Power swing block

Stub protection

Inrush detection and blocking

Negative sequence overcurrent/ Current unbalance ($I2>$; 46)

Thermal overload (T>; 49)

Over- and undervoltage (U>/<; 59/27)

Residual overvoltage (U0>; 59N)

Over- and underfrequency (f>/<; 81O/81U)

Rate-of-change of frequency (df/dt; 81R)

Circuit breaker failure protection (CBFP; 50BF/52BF)

Pole slip (78) (optional)

Distributed busbar protection (sub-unit) (optional)

CONTROL

Common function

Trip logic (94)

Voltage variation

Auto-recloser (0 → 1; 79)

Switch-on-to-fault

Dead line detection

Synchrocheck ($\Delta V/\Delta a/\Delta f$; 25)

MEASURING AND MONITORING

Number of supervised trip contacts: 4

Current (IL1, IL2, IL3, I0)

Voltage (U1, U2, U3, U12, U23, U31, U0) and frequency

Power (P, Q, S, pf) and Energy (E+, E-, Eq+, Eq-)

Current transformer supervision

Voltage transformer supervision (60)

Trip circuit supervision

Switching device status monitoring

Event recorder

Event recorder (max. 10 000 permanent event records)

Circuit breaker wear monitoring

HARDWARE

CPU module (MM/ST + RJ-45 + SM/FC)

Power supply module (PS + fault relay + 2 trips)

Voltage measurement module

Current measurement module

Number of empty slots: 6

COMMUNICATION

RJ-45 100 Mbps Ethernet + MM/ST fiber optic Ethernet

IEC 61850 (optional)

IEC 60870-5-101/104/103

Modbus/RTU and Modbus/TCP

DNP3.0

Application Drawing

