

## AQ-L357 Line protection IED



AQ-L357 is a line protection IED with 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

- 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)

Distance protection

Teleprotection (85)

Weak-end infeed protection

Out-of-step protection

Power swing block

Stub protection

Inrush detection and blocking

Negative sequence overcurrent/ Current unbalance ( $I_{2>}$ ; 46)

Thermal overload ( $T_{>}$ ; 49)

Over- and undervoltage ( $U_{>/<}$ ; 59/27)

Residual overvoltage ( $U_{0>}$ ; 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 ( $0 \rightarrow 1$ ; 79)

Switch-on-to-fault

Automatic voltage regulator/ Tap change control

Dead line detection

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

## MEASURING AND MONITORING

Number of supervised trip contacts: 4

Current ( $I_{L1}$ ,  $I_{L2}$ ,  $I_{L3}$ ,  $I_0$ )

Voltage ( $U_1$ ,  $U_2$ ,  $U_3$ ,  $U_{12}$ ,  $U_{23}$ ,  $U_{31}$ ,  $U_0$ ) and frequency

Power (P, Q, S, pf) and Energy ( $E_+$ ,  $E_-$ ,  $E_{q+}$ ,  $E_{q-}$ )

Current transformer supervision

Voltage transformer supervision (60)

Trip circuit supervision

Switching device status monitoring

Event recorder

Disturbance recorder (max. 10 000 permanent event records)

Circuit breaker wear monitoring

## HARDWARE

CPU module (MM/ST + RJ-45)

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

