

## AQ-F255 Feeder protection IED



The AQ-F255 feeder protection IED offers a modular feeder protection and control solution for applications that require a large I/O capacity. You can add up to eleven (11) I/O or communication cards into the device for extensive monitoring and control applications. AQ-F255 communicates using various protocols, including the IEC 61850 substation communication standard.

### Highlights

- Double busbar control
- A large I/O capacity
- Current- and voltage-based protections
- Cable end differential protection
- Low-impedance restricted earth fault protection
- Harmonics protection and control
- A 5-shot scheme-controlled auto-recloser
- Power and energy measurement up to Class 0.2S

## Technical Data

### PROTECTION

Non-directional overcurrent ( $I>$ ; 50/51) - 4 stages (INST, DT or IDMT)

Non-directional earth fault ( $I0>$ ; 50N/51N) - 4 stages (INST, DT or IDMT)

Directional overcurrent ( $I_{dir}>$ ; 67) - 4 stages (INST, DT or IDMT)

Directional earth fault ( $I0_{dir}>$ ; 67N) - 4 stages (INST, DT or IDMT)

Intermittent earth fault ( $I0_{int}>$ ; 67NT)

Negative sequence overcurrent/ Phase current reversal/ Current unbalance ( $I2>$ ; 46/46R/46L) - 4 stages (INST, DT or IDMT)

Harmonic overcurrent ( $I_h>$ ; 50H/51H/68H) - 4 stages (INST, DT or IDMT)

High-impedance or low-impedance restricted earth fault/ Cable end differential ( $I0_d>$ ; 87N)

Overvoltage ( $U>$ ; 59) - 4 stages (INST, DT or IDMT)

Undervoltage ( $U<$ ; 27) - 4 stages (INST, DT or IDMT)

Neutral overvoltage ( $U_{0>}$ ; 59N) - 4 stages (INST, DT or IDMT)

Sequence voltage ( $U_{1/2>}/<$ ; 47/27P/59PN) - 4 stages (INST, DT or IDMT)

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

Overpower ( $P_{>}$ ; 32O)

Underpower ( $P_{<}$ ; 32U)

Reverse power ( $P_r$ ; 32R)

Overfrequency and underfrequency ( $f_{>}/<$ ; 81O/81U) - 8 stages (INST or DT)

Rate-of-change of frequency ( $df/dt_{>}/<$ ; 81R) - 1 stage (DT)

Line thermal overload ( $TF_{>}$ ; 49F)

Voltage memory

Programmable stage ( $PG_{x>}/<$ ; 99)

Arc protection ( $I_{Arc>}/I_{0Arc>}$ ; 50Arc/50NArc) (optional)

## CONTROL

Number of objects to control and monitor: 10

Number of indicators to monitor: 10

Number of setting groups: 8

Cold load pick-up

Switch-on-to-fault

Vector jump ( $\Delta\phi$ ; 78)

Auto-recloser ( $0 \rightarrow 1$ ; 79)

Zero sequence recloser

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

## MEASURING & MONITORING

Phase, sequence and residual currents ( $I_{L1}$ ,  $I_{L2}$ ,  $I_{L3}$ ,  $I_{01}$ ,  $I_{02}$ )

Phase, sequence and residual voltages ( $U_{L1}$ ,  $U_{L2}$ ,  $U_{L3}$ ,  $U_{12}$ ,  $U_{23}$ ,  $U_{31}$ ,  $U_0$ )

Power and energy class 0.5

Power and energy class 0.2S (optional)

Current transformer supervision

Voltage transformer supervision (60)

Disturbance recorder (max. 15 000 permanent event records)

Circuit breaker wear monitoring

Total harmonic distortion

Fault locator (21FL)

Frequency (f)

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

Measurement recorder

Measurement value recorder

## HARDWARE

Current inputs: 5

Voltage inputs: 4

Digital inputs (fixed): 3

Digital outputs (fixed): 5

### Options (11 slots)

Digital inputs: +8/16/24/32/40/48/56/64/72/80/88

Digital outputs: +5/10/15/20/25/30

RTD & mA input module (8 RTD inputs OR 4 RTD inputs + 2 mA inputs)

Milliampere I/O module (4 mA outputs + 1 mA input)

Arc protection module (4 sensors + 2 HSO + 1 BI)

Communication media (specified in the "Communication" tab)

## COMMUNICATION

RJ-45 100 Mbps Ethernet (front panel, fixed)

RJ-45 100 Mbps Ethernet and RS-485 (rear panel, fixed)

Double LC 100 Mbps Ethernet (optional)

RS-232 & serial fibre (PP/PG/GP/GG) (optional)

### Communication protocols

IEC 61850

IEC 60870-5-101/104

IEC 60870-5-103

Modbus/RTU and Modbus/TCP

DNP3

SPA

Application Drawing

