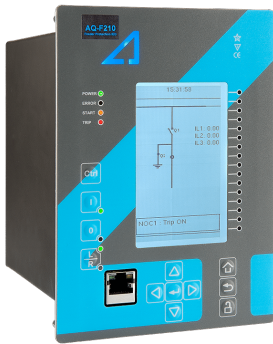


## AQ-F210 Feeder protection IED



The AQ-F210 feeder protection IED offers a modular feeder protection and control solution, with non-directional overcurrent and earth fault protections with automatic reclosing. You can add up to four (4) I/O or communication cards into the device for more comprehensive monitoring and control applications. AQ-F210 communicates using various protocols, including the IEC 61850 substation communication standard.

### Highlights

- Cable end differential protection
- Low-impedance restricted earth fault protection
- Harmonics protection and control
- A 5-shot scheme-controlled auto-recloser.

## 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)

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

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

High-impedance or low-impedance restricted earth fault/ Cable end differential ( $I0d>$ ; 87N)

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

Line thermal overload (TF> 49F)

Programmable stage ( $PGx>/<$ ; 99)

Arc protection ( $I_{Arc}>/I0_{Arc}>$ ; 50Arc/50NArc) (optional)

## CONTROL

Number of objects to control and monitor: 5

Number of indicators to monitor: 5

Number of setting groups: 8

Cold load pick-up

Switch-on-to-fault

Auto-recloser (0 → 1; 79)

## MEASURING & MONITORING

Phase, sequence and residual currents (IL1, IL2, IL3, I01, I02)

Current transformer supervision

Disturbance recorder (max. 15 000 permanent event records)

Circuit breaker wear monitoring

Total harmonic distortion

Measurement recorder

Measurement value recorder

## HARDWARE

Current inputs: 5

Digital inputs (fixed): 3

Digital outputs (fixed): 5

### Options (4 slots)

Digital inputs: +8/16/24/32

Digital outputs: +5/10

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 and RS-485 (rear panel, fixed)

Double LC 100 Mbps Ethernet (PRP/HSR) (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

