

AQ-T215 Voltage regulating IED



AQ-T215 is a voltage regulating IED. It comes with current-based and voltage-based protection functions, which makes the relay suitable for combined transformer voltage regulation and back-up protection. The transformer monitoring module is included as a standard feature, and it provides statistical information for preventive maintenance purposes. AQ-T215 communicates using various protocols, including the IEC 61850 substation communication standard.

Highlights

- Automatic/manual voltage regulating (AVR)
- Transformer back-up protection
- Overloading and through fault statistics for preventive maintenance

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/32N) - 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 ($I_h>$; 50H/51H/68H) - 4 stages (INST, DT or IDMT)

High-impedance or low-impedance restricted earth fault/ Cable end differential ($I0d>$; 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 ($U_{1/U2>/<}$; 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)

Volts-per-hertz overexcitation ($V/Hz_{>}$; 24)

Underimpedance ($Z_{<}$; 21U)

Resistance temperature detectors

Transformer status monitoring

Transformer thermal overload ($TT_{>}$; 49T)

Voltage memory

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

CONTROL

Number of objects to control and monitor: 5

Number of indicators to monitor: 5

Number of setting groups: 8

Automatic voltage regulator

Cold load pick-up

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

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

MEASURING & MONITORING

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

Phase, sequence and residual voltages ($UL1, UL2, UL3, U12, U23, U31, U0$)

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-)

Running hour counter

Measurement recorder

Measurement value recorder

HARDWARE

Current inputs: 5

Voltage inputs: 4

Digital inputs (fixed): 3

Digital outputs (fixed): 5

Options (3 slots)

Digital inputs: +8/16/24

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 (front panel, fixed)

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

