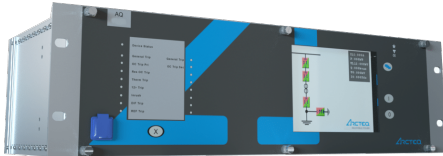


AQ-T393 Three-winding transformer protection IED



AQ-T393 is a transformer protection IED for three-winding transformer applications. It integrates a full range of protection functions as well as a variety of additional functions for control, measurement, monitoring and communications.

Highlights

- Low-impedance restricted earth fault protection
- Second and fifth harmonic restraint
- An integrated automatic voltage regulator (AVR)
- Three-winding transformer protection

Technical Data

PROTECTION FUNCTIONS

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

Residual instantaneous/time overcurrent (I_{0>}; 50N/51N)

Inrush detection and blocking

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

Thermal overload (T_>; 49)

Transformer differential, three windings (87T)

Restricted earth fault

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

Optional functions

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)

Volts-per-hertz overexcitation (V/Hz>; 24)

Distributed busbar protection (sub-unit)

CONTROL

Common function

Trip logic (94)

Switch-on-to-fault

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

Automatic voltage regulator /Tap change control (optional)

MEASURING & MONITORING

Current (IL1, IL2, IL3, I0)

Current transformer supervision

Trip circuit supervision

Switching device status monitoring

Event recorder

Event recorder (max. 10 000 permanent event records)

Circuit breaker wear monitoring

Optional measurements and monitoring functions

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

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

Voltage transformer supervision (60)

HARDWARE

CPU module (MM/ST + RJ-45)

Power supply module (PS + fault relay)

Current measurement module (3 instances)

Number of empty slots: 16

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

