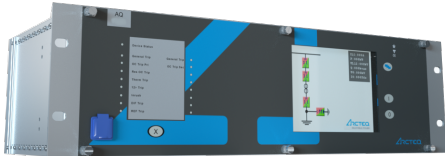


## AQ-T393 Three winding transformer protection IED



AQ-T393 is a transformer protection IED for 3-winding transformer applications. It integrates full range of protection functions along with variety of additional functions for control, measurement, monitoring and communications.

### Highlights

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

## Technical Data

### PROTECTION FUNCTIONS

Transformer differential, 2 slopes characteristic

Restricted earth fault, HV, LV sides

Overexcitation protection (option)

Automatic voltage regulator function (option)

Three-phase overcurrent, 3 stages INST, DT or IDMT

Residual overcurrent, 3 stages INST, DT or IDMT (50/51N)

Current unbalance, 1 stage (46)

Overvoltage (option), 2 stages INST, DT

Undervoltage (option), 2 stages INST, DT

Residual voltage (option), 2 stages INST, DT

Under/over frequency (option), 4 stages DT

Rate of change of frequency (option), 1 stage DT

Thermal overload protection

Breaker failure protection (50BF,52BF)

Inrush detection and blocking (68)

Voltage transformer supervision function (option)

CT supervision

Distributed busbar protection sub-unit (option)

## CONTROL

Single and three phase trip

Bay control unit, 6 objects

## MEASURING & MONITORING

Current (I1, I2, I3, Io)

Voltage (U1, U2, U3, U12, U23, U31, Uo) and frequency - optional

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

Trip circuit supervision, 4

Dead line detection function

Circuit breaker wear protection

### Event recording

Non-volatile disturbance records: 100

Non-volatile event records: 10000

- AVR (Option)

Status monitoring switching devices, 2 objects

## I/O

Current inputs: 12

Voltage inputs (option): 4

Digital inputs: 12 (Up to 120)

Digital outputs: 8 (Up to 40)

Fast trip outputs: 4

## COMMUNICATION

RJ 45 Ethernet 100Mb (front standard)

RJ 45 Ethernet 100Mb (rear standard)

RS422/RS485/RS232 interfaces (option)

Plastic or glass fiber interfaces (option)

### Communication protocols

IEC 61850

IEC 608705101,103,104

Modbus RTU and Modbus TCP/IP

DNP 3.0 and DNP 3.0 over TCP/IP

SPAbus

Application Drawing

