

AQ-G257 Generator protection IED



The AQ-G257 generator protection IED is well-suited for large machines that require complete generator protection and differential protection. You can add up to nine (9) I/O or communication cards into the device for extensive monitoring and control applications. You can also connect up to sixteen (16) RTD signals for thermal alarming and tripping. AQ-G257 communicates using various protocols, including the IEC 61850 substation communication standard.

Highlights

- Complete synchronous machine protection
- Integrated differential protection
- Power measurements 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/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)

Voltage-restrained overcurrent ($I_v>$; 51V)

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

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

Neutral overvoltage ($U0>$; 59N) - 4 stages (INST, DT or IDMT)

Sequence voltage ($U1/U2>/<$; 47/27P/59PN) - 4 stages (INST, DT or IDMT)

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

Power protection (P, Q, S>/<; 32) - 4 stages (DT)

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)

Power factor (PF<; 55)

Underexcitation (Q<; 40)

Underimpedance (Z<; 21U)

Inadvertent energizing (I>U<I.A.E.; 50/27)

Generator/transformer differential (87T/87N/87G)

Machine thermal overload (TM>; 49M)

100 % stator earth fault (U03rd>; 64S)

Voltage memory

Programmable stage (PGx>/<; 99)

Arc protection (IArc>/IOArc>; 50Arc/50NArc) (optional)

CONTROL

Number of objects to control and monitor: 10

Number of indicators to monitor: 10

Number of setting groups: 8

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

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

Synchronizer ($\Delta V/\Delta a/\Delta f$; 25) (optional)

MEASURING AND MONITORING

Phase, sequence and residual currents (IL1, IL2, IL3, IO1, IO2)

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

Power and energy class 0.5

Power and energy class 0.25 (optional)

Current transformer supervision - 2 instances

Voltage transformer supervision (60)

Event recorder (max. 15 000 permanent event records)

Disturbance recorder (max. 100 records á 5 seconds at 3.2 kHz sampling)

Circuit breaker wear monitoring

Total harmonic distortion

Running hour counter

Frequency (f)

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

Measurement recorder

Measurement value recorder

HARDWARE

Current inputs: 10

Voltage inputs: 4

Digital inputs (fixed): 3

Digital outputs (fixed): 5

Options (9 slots)

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

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

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

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

External I/O modules (see "Accessories" tab)

Communication media (specified in the "Communication" tab)

COMMUNICATION

Communication inputs

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

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

2 x RJ-45 100 Mbps Ethernet with an IRIG-B input (optional)

2 x ST 100 Mbps Ethernet with an IRIG-B input (optional)

2 x LC 100 Mbps Ethernet (PRP/HSR) (optional)

RS-232 serial fiber (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

ACCESSORIES

AX007 External 6-channel 2-/3-wire RTD input module (pre-configured)

AX008 External 8-channel thermocouple and mA input module (pre-configured)

AX013 Raising frame (120 mm)

AX014 Raising frame (40 mm)

AX015 Wall mounting bracket

Application Drawing

