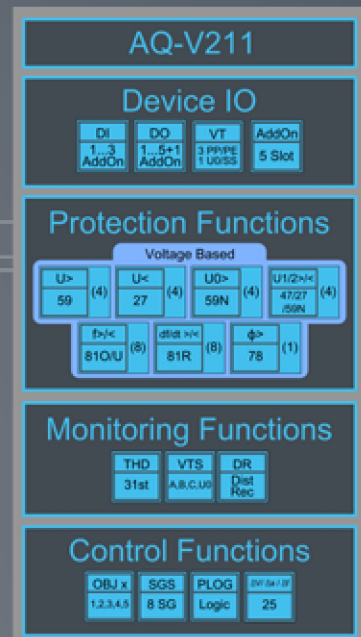
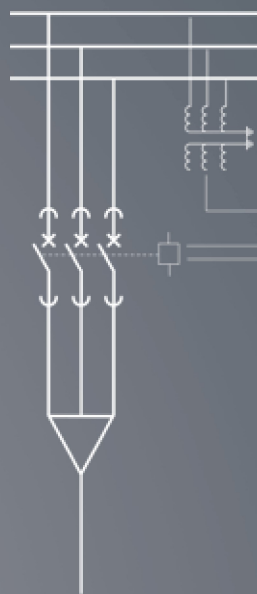


# AQ-V211 voltage protection IED

The AQ-V211 offers a modular voltage protection solution for substations. Voltage and frequency protection, synchro-check and synchronizer with up to five optional I/O or communication cards and powerful logic programming possibility make AQ-V211 optimal for demanding load shedding or automatic transfer applications. The AQ-V211 communicates using various protocols including IEC 61850 substation communication standard.



- 8 frequency stages and 8 setting groups for load shedding
- Synchrocheck for up to three circuit breakers
- Synchronizer for machine frequency and voltage control

## PROTECTION FUNCTIONS

- Overvoltage, 4 stages INST, DT or IDMT (59)
- Undervoltage, 4 stages INST, DT or IDMT (27)
- Zero sequence overvoltage, 4 stages INST, DT or IDMT (59N)
- Negative/positive sequence over voltage, 4 stages INST, DT or IDMT (47)
- Vector jump, 1 stage (78)
- Over/under frequency, 8 stages INST or DT (81O/81U)
- Rate of change of frequency, 8 stages INST or DT or IDMT (81R)

## MEASURING AND MONITORING

- Voltage measurements (UL1-UL3, U12-U31, U0, SS)

- Voltage THD and harmonics (up to 31st)
- Disturbance recorder (3.2 kHz)
- Fuse failure (VTS)
- Trip circuit supervision (TCS)

## CONTROL

- Controllable objects: 5
- Synchro-check (25)
- 8 setting groups
- Synchronizer (option)

## HARDWARE

- Voltage inputs: 4
- Digital inputs: 3 (standard)
- Output relays: 5+1 (standard)

## OPTIONS (5 SLOTS)

- Digital inputs optional: +8/16/24/32/40

- Digital outputs optional: +5/10/15
- 2mA in + 4xRTD in OR 8xRTD in
- 4mA out+1mA in
- Communication media (specified below)

## EVENT RECORDING

- Non-volatile disturbance records: 100
- Non-volatile event records: 15000

## COMMUNICATION MEDIA

- RJ 45 Ethernet 100Mb (front standard)
- RJ 45 Ethernet 100Mb and RS 485 (rear standard)
- Double LC Ethernet 100Mb (option)
- RS232 + serial fibre PP/PG/GP/GG (option)

## COMMUNICATION PROTOCOLS STANDARD

- IEC 61850
- IEC 60870-5-103/101/104
- Modbus RTU, Modbus TCP/IP
- DNP 3.0, DNP 3.0 over TCP/IP
- SPA