AQ-M255 Motor protection IED

The AQ-M255 motor protection IED offers a modular protection and control solution for larger and more important motors that require a large I/O capacity. You can add up to eleven (11) 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-M255 communicates using various protocols, including the IEC 61850 substation communication standard.

Highlights

- Powerful motor management with a large I/O capacity
- Five (5) thermal models (time constant accurate)
- Soft start protection beginning from 6 Hz
- Star-delta started motor supervision
- Two-speed motor protection
- Optional power and energy class 0.2S
- Asynchronous and synchronous motors

Technical Data

PROTECTION FUNCTIONS

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 (Idir>; 67) - 4 stages (INST, DT or IDMT)
Directional earth fault (I0dir>; 67N/32N) - 4 stages (INST, DT or IDMT)
Harmonic overcurrent (Ih>; 50H/51H/68H) - 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 (Ih>; 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 (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)
Motor status monitoring
Motor start/ Locked rotor monitoring (Ist>; 48/14)
Machine thermal overload (TM>; 49M)
Mechanical jam (Im>; 51M)
Frequent start (N>; 66)
Non-directional undercurrent (I<; 37)
Voltage memory
Programmable stage (PGx>/<; 99)
Arc protection (IArc>/I0Arc>; 50Arc/50NArc) (optional)

CONTROL

Number of objects to control and monitor: 10
Number of indicators to monitor: 10
Number of setting groups: 8

MEASURING AND 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)
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 (11 slots)

Digital inputs: +8/16/24/32/40/48/56/64/72
Digital outputs: +5/10/15/20/25/30
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