

AQ-M210 Motor protection device

Description



The AQ-M210 motor protection device offers a modular protection and control solution for small and medium-sized motors. You can add up to four (4) I/O or communication cards into the device for more comprehensive monitoring and control applications. You can also connect up to sixteen (16) RTD signals for thermal alarming and tripping. AQ-M210 communicates using various protocols, including communication according to the IEC 61850 standard.

Highlights:

- Five (5) thermal models (time constant accurate).
- Soft start protection begins from 6 Hz.
- Wye-delta started motor supervision.
- Two-speed motor protection.

Technical data

PROTECTION

- Non-directional overcurrent ($I_{>}$; 50/51) - 4 stages (INST, DT or IDMT)
- Non-directional earth fault ($I_{0>}$; 50N/51N) - 4 stages (INST, DT or IDMT)
- Negative sequence overcurrent/ Phase current reversal/ Current unbalance ($I_{2>}$; 46/46R/46L) - 4 stages (INST, DT or IDMT)
- Harmonic overcurrent ($I_{h>}$; 50H/51H/68H) - 4 stages (INST, DT or IDMT)
- Circuit breaker failure protection (CBFP; 50BF/52BF)
- High-impedance or low-impedance restricted earth fault/ Cable end differential ($I_{0d>}$; 87N)
- Motor status monitoring
- Machine thermal overload ($T_{M>}$; 49M)
- Motor start/ Locked rotor monitoring ($I_{st>}$; 48/14)
- Frequent start ($N_{>}$; 66)
- Non-directional undercurrent ($I_{<}$; 37)
- Mechanical jam ($I_{m>}$; 51M)
- Resistance temperature detectors (RTD)
- Programmable stage ($PG_{x>/<}$; 99)
- Arc protection ($I_{Arc>/I_{0Arc>}}$; 50Arc/50NArc) (optional)

CONTROL

- Number of objects to control and monitor: 5
- Number of indicators to monitor: 5
- Number of setting groups: 8
- Cold load pick-up

MEASURING AND MONITORING

- Phase, sequence and residual currents (IL1, IL2, IL3, IO1, IO2)
- Frequency (f)
- Current transformer supervision
- Circuit breaker wear monitoring
- Total harmonic distortion (current)
- Running hour counter
- Measurement recorder
- Measurement value recorder
- Event recorder (max. 15 000 permanent event records)
- Disturbance recorder (max. 100 records á 5 seconds at 3.2 kHz sampling)

HARDWARE

- Current inputs: 5
- Digital inputs (fixed): 3
- Digital outputs (fixed): 5
- Number of empty slots: 4
- Digital input module (8 x DI) (optional)
- Digital output module (5 x DO) (optional)
- Milliampere output module (4 x mA out, 1 x mA in) (optional)
- RTD input module (8 RTD inputs) (optional)
- Arc protection module (4 x channels, 2 x HSO, 1 x BI) (optional)
- Communication media (see "Communication" below)
- External I/O modules (see "Accessories" below)

COMMUNICATION

Communication inputs

- RJ-45 100 Mbps Ethernet (front panel, fixed)
- RJ-45 100 Mbps Ethernet and RS-485 (rear panel, fixed)
- Double RJ-45 Ethernet & IRIG-B communication module (optional)
- Double ST Ethernet & IRIG-B communication module (optional)
- Double LC (HSR/PRP) Ethernet communication module (optional)
- Double RJ-45 (HSR/PRP) Ethernet communication module (optional)
- RS-232 & serial fiber communication module (optional)

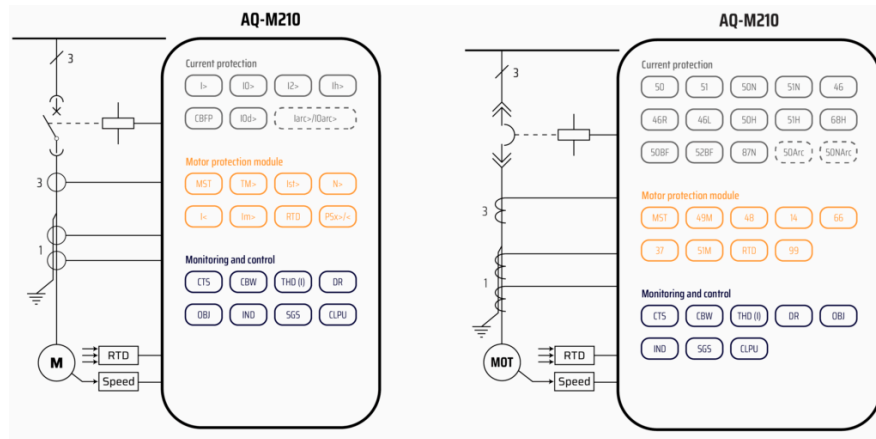
Communication protocols

- IEC 61850 (edition 1)
- IEC 60870-5-101/104
- IEC 60870-5-103
- Modbus/RTU and Modbus/TCP
- DNP3
- SPA

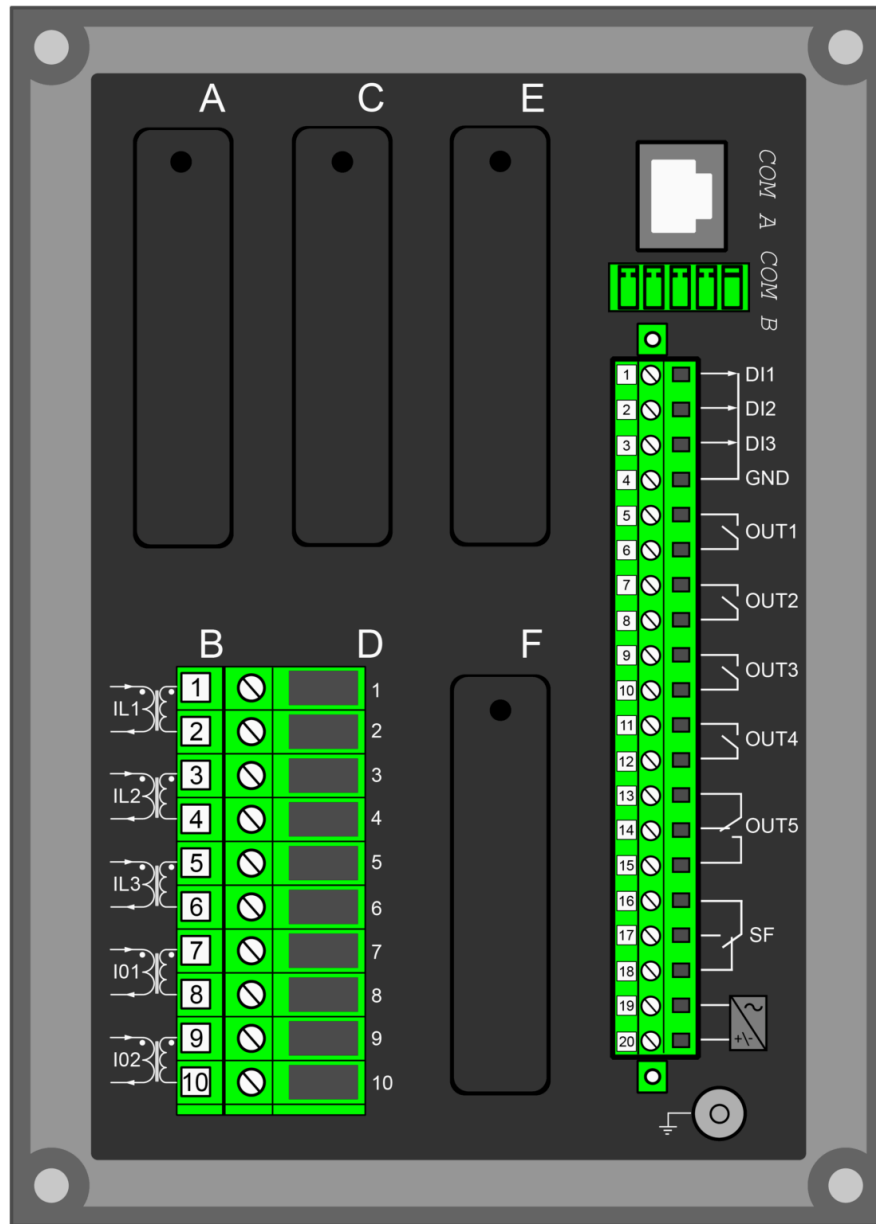
ACCESSORIES

- AX007 External 6-channel 2-/3-wire RTD input module (pre-configured)
- AX008 External 8-channel thermocouple and mA input module (pre-configured)
- AX009 Raising frame (87 mm)
- AX010 Raising frame (40 mm)
- AX011 Combiflex frame
- AX012 Wall mounting bracket

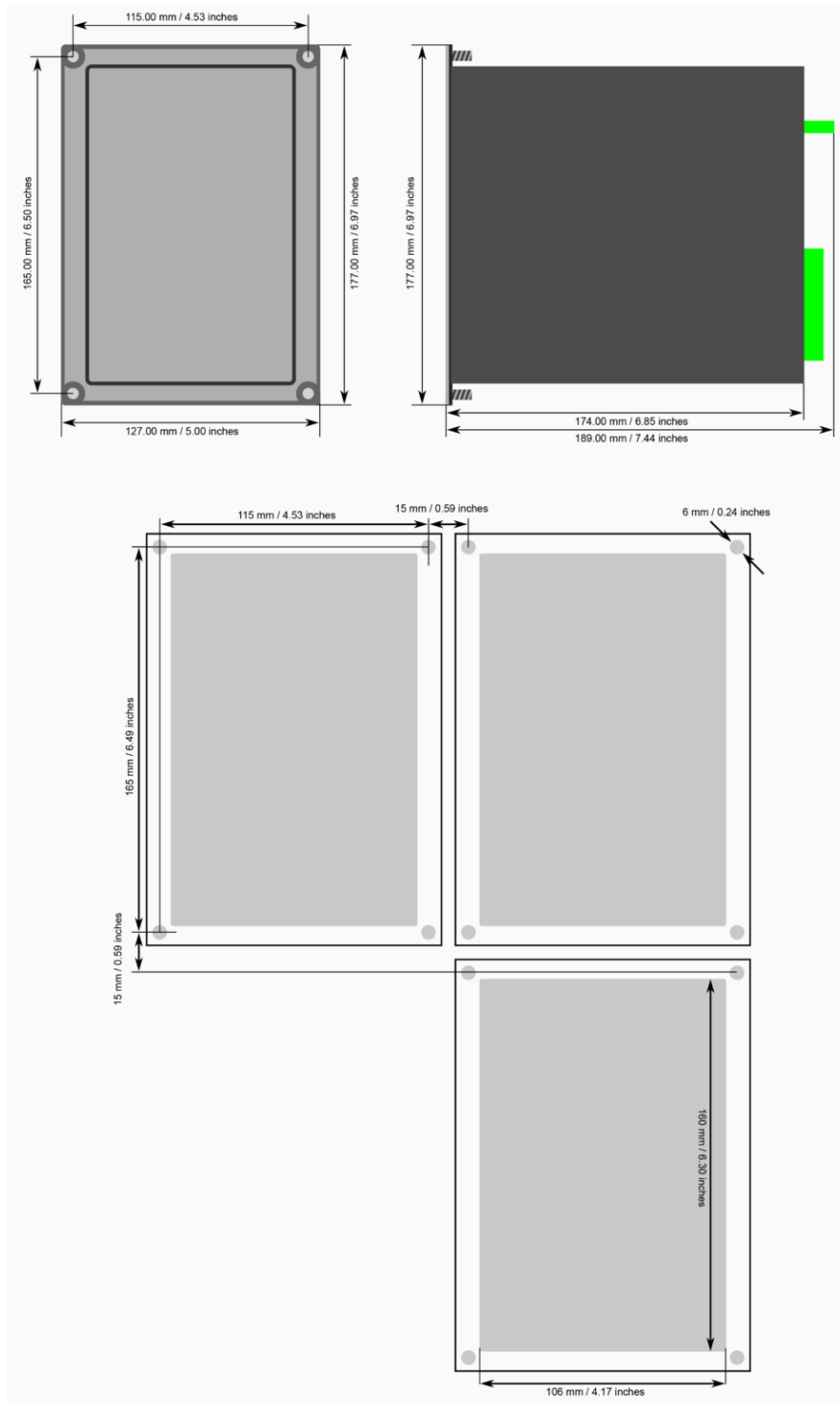
Application Drawing



Device Rear Image



Device and Cut-out Image



Order Code

	AQ - M 2 1 0 - P X 8 X A X A - X X X X
Model	
M Motor protection	
Device size	
1 1/4 of 19" rack	
Analog measurement	
0 5 Current measurement channels	
Mounting	
P Panel mounting	
Auxiliary voltage	
H 80...265 VAC/DC	
L 18...72 VDC	
Measurement accuracy class	
8 N/A	
Terminals	
A Standard	
B Ring-lug current terminals	
C Standard current terminals, spring cage I/O terminals	
D Ring-lug current terminals, spring cage I/O terminals	
Reserved for future use	
A N/A	
Digital inputs on power supply module	
A 3 Digital inputs, 24 V nominal threshold	
B 3 Digital inputs, 110 V nominal threshold	
C 3 Digital inputs, 220 V nominal threshold	
D 2 Digital inputs, 24 V nominal threshold	
E 2 Digital inputs, 110 V nominal threshold	
F 2 Digital inputs, 220 V nominal threshold	
Reserved for future use	
A N/A	
Slots A, C, E, F (4 pcs)	
A Empty	
B 8 Digital inputs	
C 5 Output relays (max. 2 pcs)	
D Arc protection with 4 point sensor channels, 2 x HSO, 1 x BI (max. 1 pcs)	
F 8 x RTD input (max. 2 pcs)	
G 2 x RJ-45 100Mb Ethernet & IRIG-B (max. 1 pcs) *	
H 2 x ST 100Mb Ethernet & IRIG-B (max. 1 pcs) *	
I 4 x mA outputs - 1 x mA input (max. 2 pcs)	
J Double LC 100Mb Ethernet (HSR, PRP redundant protocols) (max. 1 pcs) *	
K Double RJ45 100Mb Ethernet (HSR, PRP redundant protocols) (max. 1 pcs) *	
L RS-232 - Serial fiber (Plastic-Plastic) (max. 1 pcs) *	
M RS-232 - Serial fiber (Plastic-Glass) (max. 1 pcs) *	
N RS-232 - Serial fiber (Glass-Plastic) (max. 1 pcs) *	
O RS-232 - Serial fiber (Glass-Glass) (max. 1 pcs) *	

* Can only be applied to the last slot