

AQ-T256 Transformer protection device



Description

AQ-T256 is a transformer protection device with sophisticated and easy-to-use differential protection functions. The relay provides overcurrent protection for both low-voltage and high-voltage sides, earth fault protection, negative sequence overcurrent protection as well as two independent instances of restricted earth fault protection. You can add up to ten (10) I/O or communication cards into the device for extensive monitoring and control applications. AQ-T256 communicates using various protocols, including the IEC 61850 substation communication standard.

Highlights:

- A large I/O capacity.
- Both predefined and customizable connection group selection.
- 2nd and 5th harmonic blocking.
- Automatic verification of connection group and nominal value settings.
- Overloading and through fault statistics for preventive maintenance.

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)
- Resistance temperature detectors (RTD)
- Transformer thermal overload (TT>; 49T)
- Generator/transformer differential ($I_{dx>}$; 87T/87G/87M/87N)
- Transformer status monitoring
- Programmable stage ($PG_{x>/<}$; 99)
- Arc protection ($I_{Arc>}/I_{0Arc>}$; 50Arc/50NArc) (optional)

CONTROL

- Number of objects to control and monitor: 10
- Number of indicators to monitor: 10
- Number of setting groups: 8
- Cold load pick-up
- Switch-on-to-fault

MEASURING AND MONITORING

- Phase, sequence and residual currents (I_{L1} , I_{L2} , I_{L3} , I_{01} , I_{02})
- Frequency (f)
- Current transformer supervision - 2 instances
- Circuit breaker wear monitoring
- Total harmonic distortion (current)
- 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: 10
- Digital inputs (fixed): 3
- Digital outputs (fixed): 5
- Number of empty slots: 10
- Digital inputs: +8/16/24/32/40/48/56/64/72/80 (optional)
- Digital outputs: +5/10/15/20/25/30 (optional)
- High-speed high-current output module (optional)
- Milliampere I/O module (4 mA inputs + 1 mA output) (optional)
- Milliampere I/O module (4 mA outputs + 1 mA input) (optional)
- RTD input module (8 RTD inputs) (optional)
- Arc protection module (4 sensors + 2 HSO + 1 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 SFP 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)

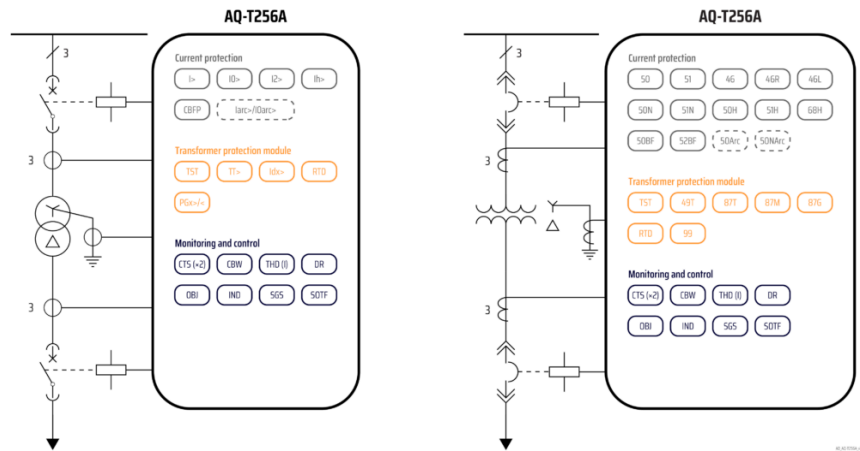
Communication protocols

- IEC 61850 (edition 1)
- IEC 61850 (edition 2)
- IEC 60870-5-101/104
- IEC 60870-5-103
- Modbus/RTU and Modbus/TCP
- DNP3
- SPA

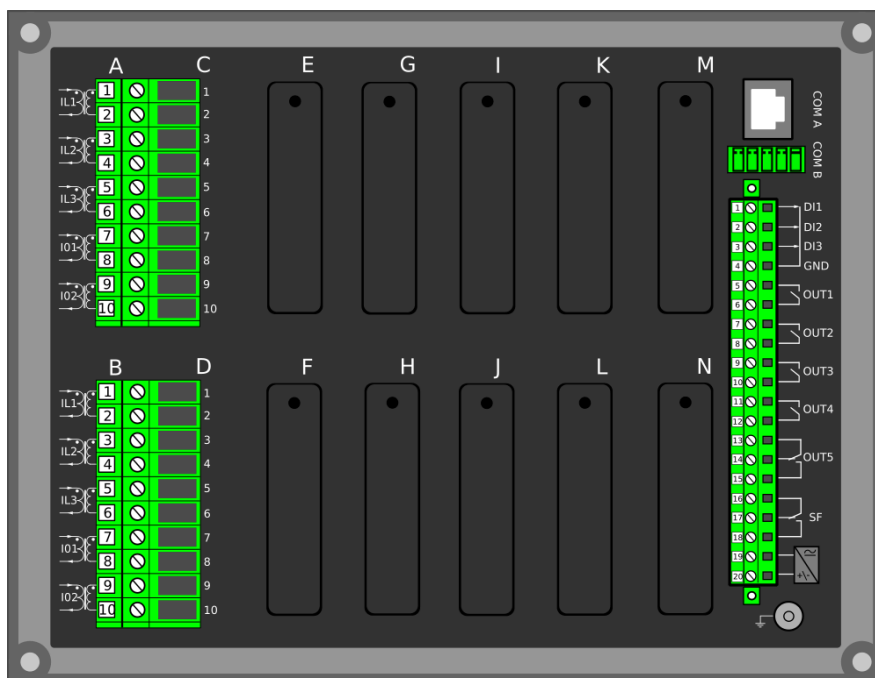
ACCESSORIES

- 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

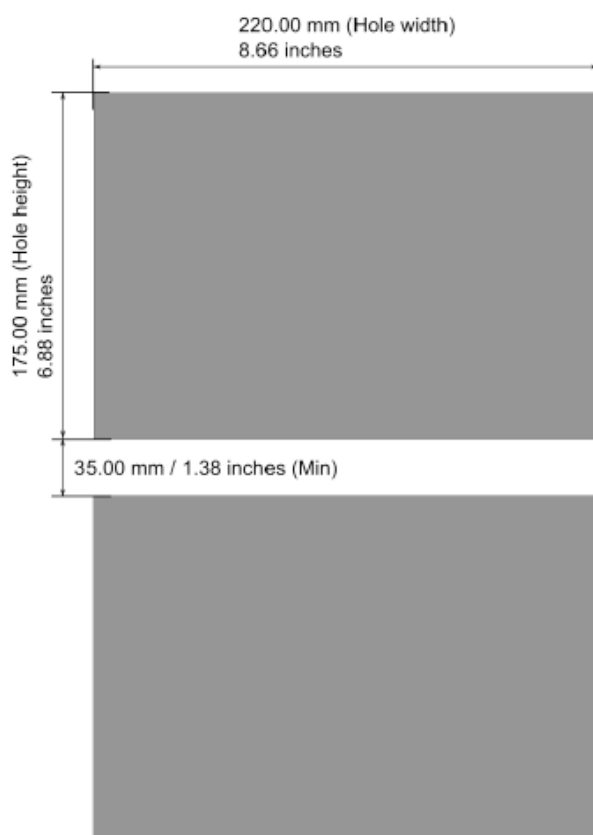
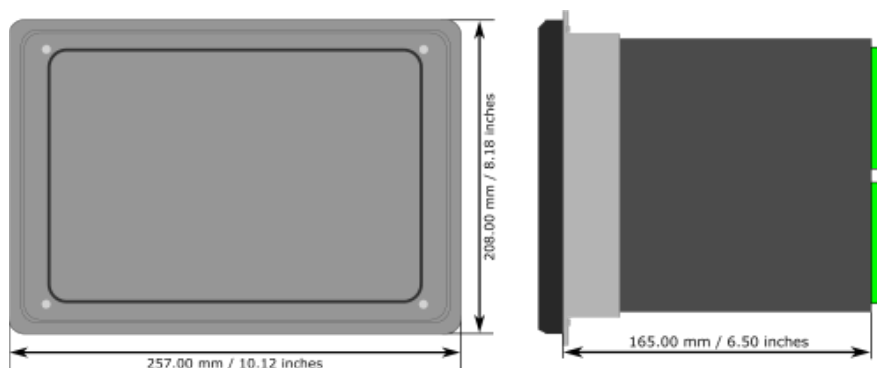
Application Drawing



Device Rear Image



Device and Cut-out Image



Order Code

	AQ - T 2 5 6 A - P X 8 X A X A - X X X X X X X X X X
Model	
T Transformer protection	
Device size	
5 1/2 of 19" rack	
Analog measurement	
6 10 Current measurement channels	
Functionality package	
A Standard	
Mounting	
P Panel mounted	
Auxiliary voltage	
H 80...265 VAC/DC	
L 18...72 VDC	
Measurement accuracy	
8 NA	
Terminals	
A Standard	
B Ring lug terminals	
Reserved for future use	
A NA	
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	
Reserved for future use	
A NA	
Slots E, F, G, H, I, J, K, L, M, N (10 pos)	
A Empty	
B 8 Digital inputs	
C 5 Output relays ****	
D Arc protection with 4 point sensor channels, 2 x HSO, 1 x BI *	
F 8 x RTD input **	
G 2 x RJ-45 100Mb Ethernet & IRI-G-B * / ***	
H 2 x ST 100Mb Ethernet & IRI-G-B * / ***	
I 4 x mA outputs - 1 x mA input **	
J Double LC 100Mb Ethernet (HSR, PRP redundant protocols) * / ***	
K Double RJ45 100Mb Ethernet (HSR, PRP redundant protocols) * / ***	
L RS-232 - Serial fiber (Plastic-Plastic) * / ***	
M RS-232 - Serial fiber (Plastic-Glass) * / ***	
N RS-232 - Serial fiber (Glass-Plastic) * / ***	
O RS-232 - Serial fiber (Glass-Glass) * / ***	
* One card at most per IED	
** Two cards at most per IED	
*** Can only be applied to the two last slots	
**** Five cards at most per IED	