

AQ-F255S Feeder Protection Device



Description

AQ-F255S offers a modular feeder protection and control solution for applications that require a large I/O capacity and the synchronizer function. You can add up to eleven (11) I/O or communication modules into the device for extensive monitoring and control applications. AQ-F255S communicates using various protocols, including communication according to the IEC 61850 standard.

Highlights

- Double busbar control.
- A large I/O capacity.
- Current-based and voltage-based protections.
- Cable-end differential protection.
- Low-impedance restricted earth fault protection.
- Harmonics protection and control.
- A 5-shot scheme-controlled auto-recloser.
- The synchronizer function.
- Power and energy measurement accuracy of up to 0.2 %.

See all AQ-F255 variants

Technical data

PROTECTION

- Non-directional overcurrent ($I_{>}$; 50/51) - 4 stages
- Non-directional earth fault ($I_{0>}$; 50N/51N) - 4 stages
- Directional overcurrent ($I_{dir>}$; 67) - 4 stages
- Directional earth fault ($I_{0dir>}$; 67N/32N) - 4 stages
- Intermittent earth fault ($I_{0int>}$; 67NT)
- Negative sequence overcurrent/ Phase current reversal/ Current unbalance ($I_{2>}$; 46/46R/46L) - 4 stages
- Harmonic overcurrent ($I_{h>}$; 50H/51H/68H) - 4 stages
- Circuit breaker failure protection (CBFP; 50BF/52BF)
- High-impedance or low-impedance restricted earth fault/ Cable end differential ($I_{0d>}$; 87N)
- Overvoltage ($U_{>}$; 59) - 4 stages
- Undervoltage ($U_{<}$; 27) - 4 stages
- Neutral overvoltage ($U_{0>}$; 59N) - 4 stages
- Sequence voltage ($U_{1/2>}<$; 47/27P/59PN) - 4 stages
- Overfrequency and underfrequency ($f_{>}<$; 81O/81U) - 8 stages
- Rate-of-change of frequency ($df/dt_{>}<$; 81R) - 8 stages
- Low-voltage ride-through (LVRT; 27T)
- Voltage-restrained overcurrent ($I_{v>}$; 51V)
- Power protection (P, Q, S) $_{>}<$; 32) - 4 stages
- Line thermal overload (TF $_{>}$; 49F)
- Resistance temperature detectors (RTD)
- Programmable stage (PS $_{x>}<$; 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 (CLPU)
- Switch-on-to-fault (SOTF)
- Auto-recloser (0 → 1; 79)
- Zero sequence recloser ($U_0 > RECL$; 79N)
- Vector jump ($\Delta\phi$; 78)
- Synchrocheck ($\Delta V/\Delta a/\Delta f$; 25)
- Synchronizer ($\Delta V/\Delta a/\Delta f$; 25)

MONITORING

- Current transformer supervision
- Voltage transformer supervision (VTS; 60)
- Circuit breaker wear monitoring
- Total harmonic distortion (current)
- Total harmonic distortion (voltage)
- Fault locator (Z1FL)
- 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)

MEASUREMENTS

- Phase, sequence and residual currents (IL1, IL2, IL3, I01, I02)
- Phase, sequence and residual voltages (UL1, UL2, UL3, UL12, UL23, UL31, U0)
- Frequency (f)
- Power (P, Q, S, pf) and Energy (E+, E-, Eq+, Eq-)
- Power and energy measurement accuracy of 0.5 %
- Power and energy measurement accuracy of up to 0.2 % (optional)

HARDWARE

Standard hardware

- Current inputs: 5
- Voltage inputs: 4
- Digital inputs: 3
- Digital outputs: 5
- Number of empty slots: 11

Optional hardware modules

- Digital input module (8 x DI)
- Digital output module (5 x DO)
- High-speed high-current output module (3 x out)
- Milliampere input module (4 x mA in, 1 x mA out)
- Milliampere output module (4 x mA out, 1 x mA in)
- RTD input module (8 RTD inputs)
- Arc protection module (4 x channels, 2 x HSO, 1 x BI)
- Communication media (see "Communication" below)
- External I/O modules (see "Accessories" below)

COMMUNICATION

Standard communication ports

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

Optional communication modules

- Double RJ-45 Ethernet & IRIG-B communication module
- Double ST Ethernet & IRIG-B communication module
- Double SFP Ethernet & IRIG-B communication module
- Double LC (HSR/PRP) Ethernet communication module
- Double RJ-45 (HSR/PRP) Ethernet communication module
- RS-232 & serial fiber communication module

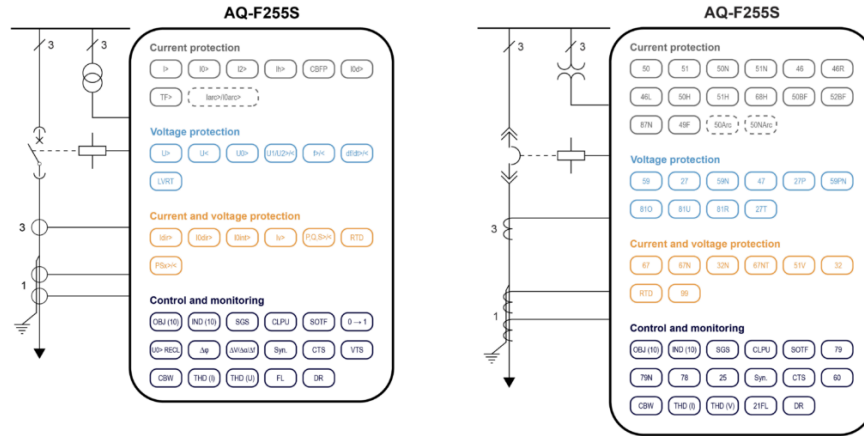
Communication protocols

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

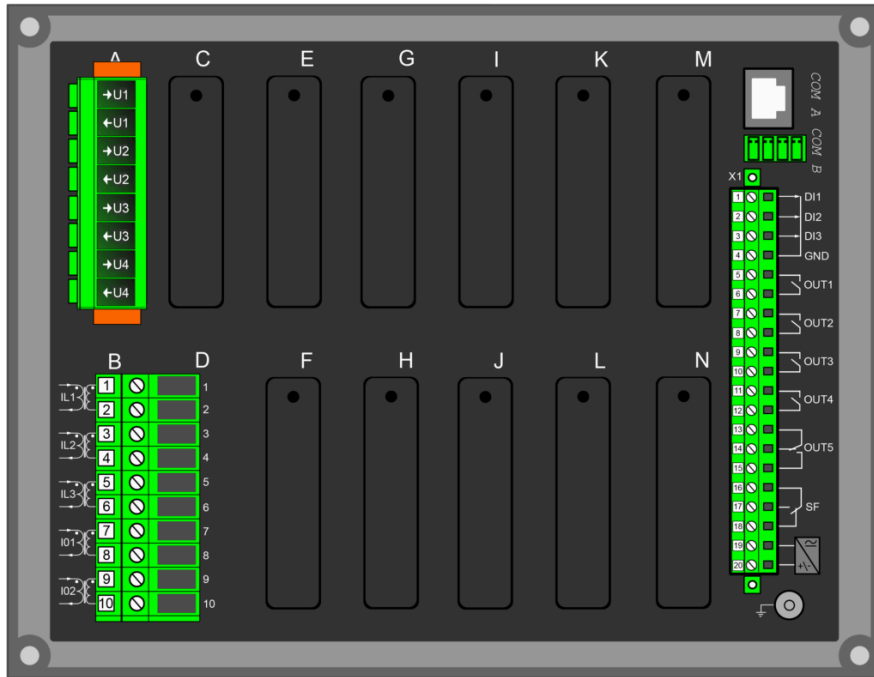
ACCESSORIES

- 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
- AX020 SFP module (2 km, MM)
- AX021 SFP module (40 km, SM)
- AX022 SFP module (120 km, SM)

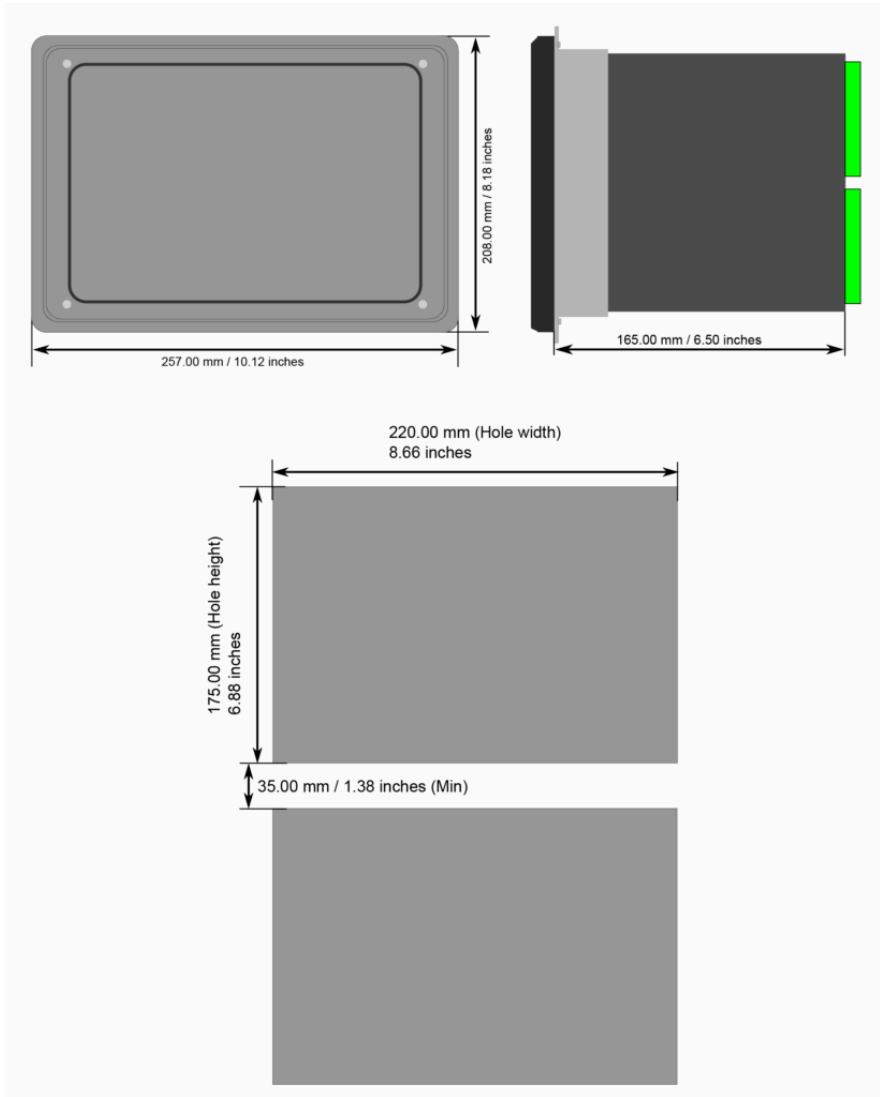
Application Drawing



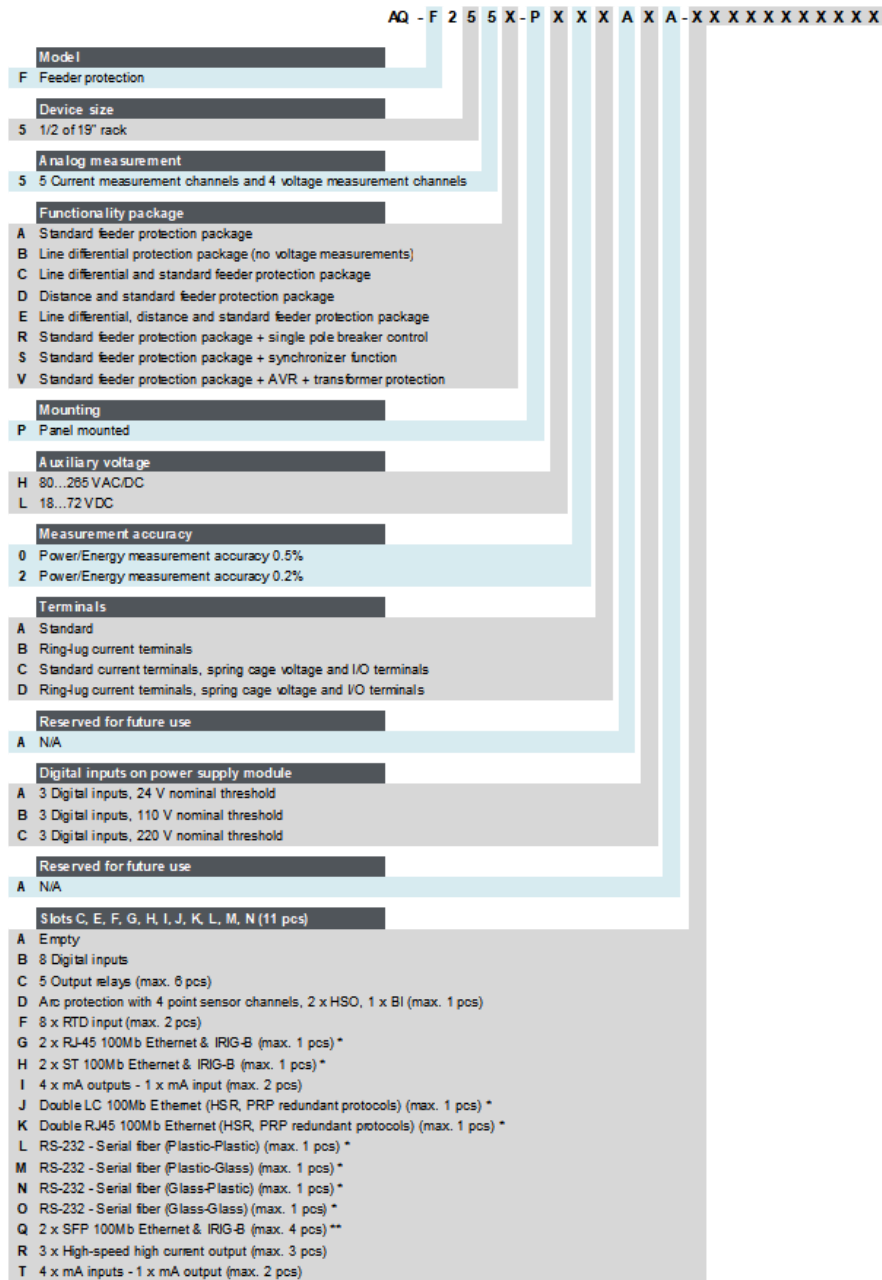
Device Rear Image



Device and Cut-out Image



Order Code



* Can only be applied to the two last slots.
 ** Can only be applied to the four last slots. Requires an SFP adapter. See "Accessories" list.