

AQ-F213D Feeder protection device



Description

The AQ-F213D feeder protection device provides optimal performance for medium-voltage (main) or high-voltage (back-up) protection, control and monitoring applications. AQ-F213D integrates protection, control, monitoring, measuring, communication and extensive diagnostics information in one compact package. The device has a fully modular hardware construction with three (3) empty I/O slots. This gives the device a high level of flexibility. You can simply plug in additional I/O or communication modules according to application needs.

The development of the AQ-F213D feeder protection device uses the latest available technologies, which provides protection engineers with more options and a completely new dimension to protection. The device has many features which guarantee its maximum usability. These include the highly customizable graphic interface, the ability to store PDF files and other supportive documents, and extensive user log information. Additionally, the powerful configuration and setting software tools are easy to configure and free of charge.

We offer five (5) variants of the AQ-F213 feeder protection device, A-E. AQ-F213D includes advanced feeder protections, such as directional overcurrent protection and over-/underfrequency protections. The D variant also includes the fault locator monitoring function.

Highlights:

- Directional earth fault protection.
- Over-, under-, and neutral overvoltage protections.
- Low-impedance restricted earth fault protection.
- Harmonics protection and control.
- A 5-shot scheme-controlled auto-recloser.

- IEC 61850 communication protocol, edition 1.

See all AQ-F213 variants

Technical data

PROTECTION

- 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 ($I_{dir}>$; 67) - 4 stages (INST, DT or IDMT)
- Directional earth fault ($I0_{dir}>$; 67N/32N) - 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 ($I_h>$; 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 ($I0d>$; 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)
- Overfrequency and underfrequency ($f>/<$; 81O/81U) - 8 stages (INST or DT)
- Line thermal overload (TF>; 49F)
- Resistance temperature detectors (RTD)
- Voltage memory
- Arc protection ($I_{Arc}>/I0_{Arc}>$; 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
- Switch-on-to-fault
- Auto-recloser (0 → 1; 79)

MEASURING AND MONITORING

- Phase, sequence and residual currents (IL1, IL2, IL3, IO1, IO2)
- Phase, sequence and residual voltages (UL1, UL2, UL3, U12, U23, U31, U0)
- Frequency (f)
- Power (P, Q, S, pf) and Energy (E+, E-, Eq+, Eq-)
- Current transformer supervision
- Voltage transformer supervision (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)

HARDWARE

- Current inputs: 5
- Voltage inputs: 3
- Digital inputs (fixed): 6
- Digital outputs (fixed): 5
- Number of empty slots: 3
- Digital inputs: +8/16/24 (optional)
- Digital outputs: +5/10 (optional)
- Milliampere I/O module (4 mA outputs + 1 mA input)
- Arc protection module (4 sensors + 2 HSO + 1 BI)
- 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)
- 2 x RJ-45 100 Mbps Ethernet with an IRIG-B input (optional)
- 2 x ST 100 Mbps Ethernet with an IRIG-B input (optional)
- 2 x LC 100 Mbps Ethernet (PRP/HSR) (optional)
- RS-232 serial fiber (PP/PG/GP/GG) (optional)

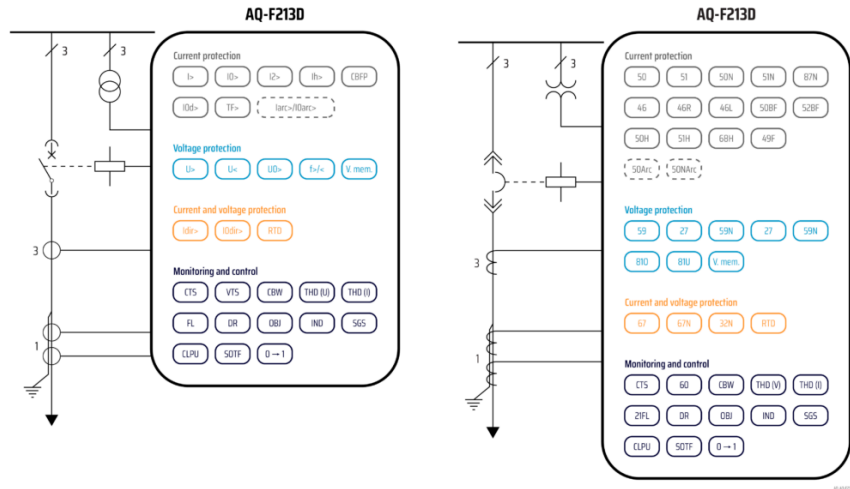
Communication protocols

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

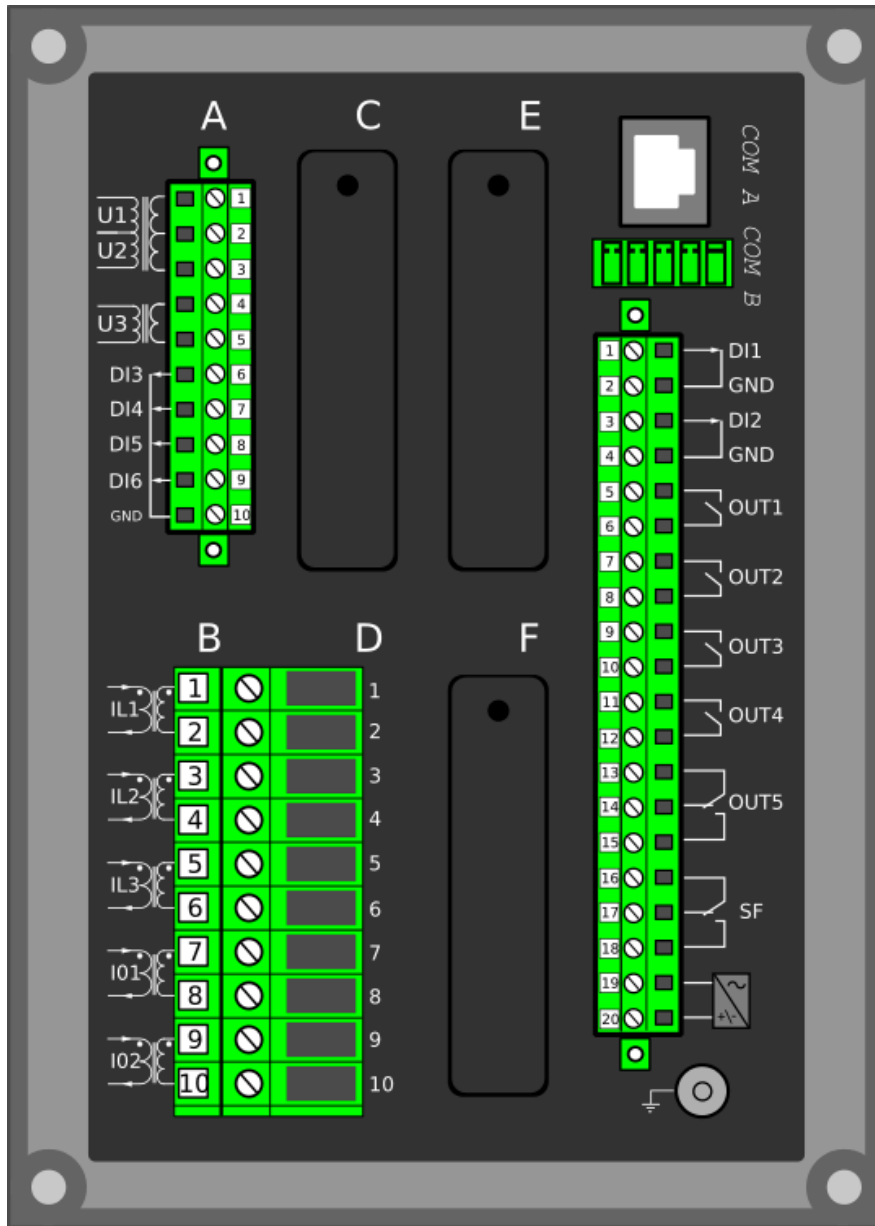
ACCESSORIES

- 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

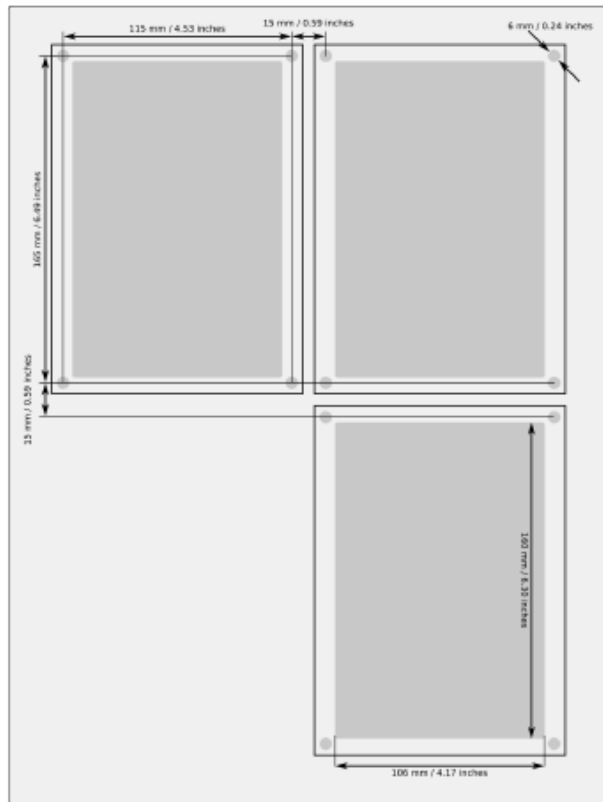
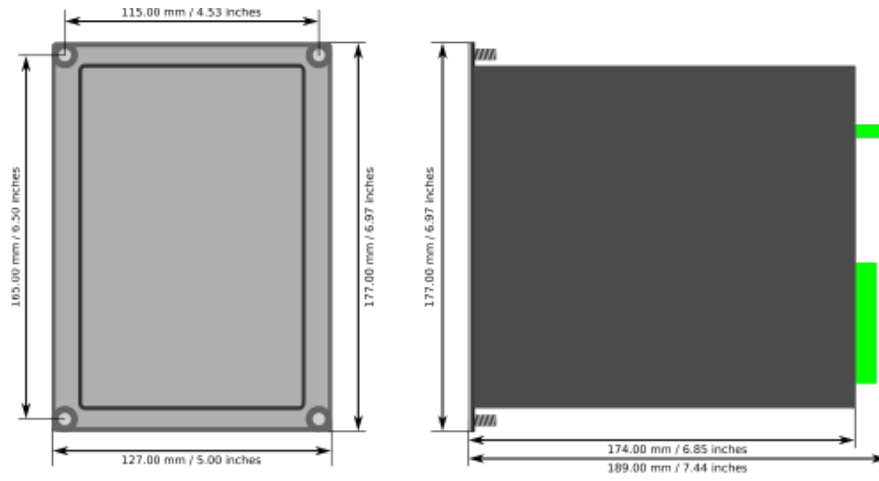
Application Drawing



Device Rear Image



Device and Cut-out Image



Order Code

