

# AQ-F213A Feeder Protection Device



## Description

AQ-F213A provides optimal performance for medium-voltage (main) or high-voltage (back-up) protection, control and monitoring applications. AQ-F213A 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.

AQ-F213A's development 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.

AQ-F213A includes basic feeder protections with an excellent price-performance ratio.

## Highlights:

- Low-impedance restricted earth fault protection.
- Harmonics protection and control.
- A 5-shot scheme-controlled auto-recloser.

**See all AQ-F213 variants**

## Technical data

### PROTECTION

- Non-directional overcurrent (I<sub>></sub>; 50/51) - 4 stages
- Non-directional earth fault (IO<sub>></sub>; 50N/51N) - 4 stages
- Negative sequence overcurrent/ Phase current reversal/ Current unbalance (I2<sub>></sub>; 46/46R/46L) - 4 stages
- Harmonic overcurrent (Ih<sub>></sub>; 50H/51H/68H) - 4 stages
- Circuit breaker failure protection (CBFP; 50BF/52BF)
- High-impedance or low-impedance restricted earth fault/ Cable end differential (IOd<sub>></sub>; 87N)
- Line thermal overload (TF<sub>></sub>; 49F)
- Resistance temperature detectors (RTD)
- Arc protection (IArc<sub>></sub>/IOArc<sub>></sub>; 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 (CLPU)
- Switch-on-to-fault (SOTF)
- Auto-recloser (0 → 1; 79)

### MONITORING

- Current transformer supervision
- Circuit breaker wear monitoring
- 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, IO1, IO2)
- Frequency (f)

## HARDWARE

### Standard hardware

- Current inputs: 5
- Voltage inputs: 3
- Digital inputs: 6
- Digital outputs: 5
- Number of empty slots: 3

### Optional hardware modules

- Digital input module (8 x DI)
- Digital output module (5 x DO)
- 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 LC (HSR/PRP) Ethernet communication module
- Double RJ-45 (HSR/PRP) Ethernet communication module
- RS-232 & serial fiber communication module

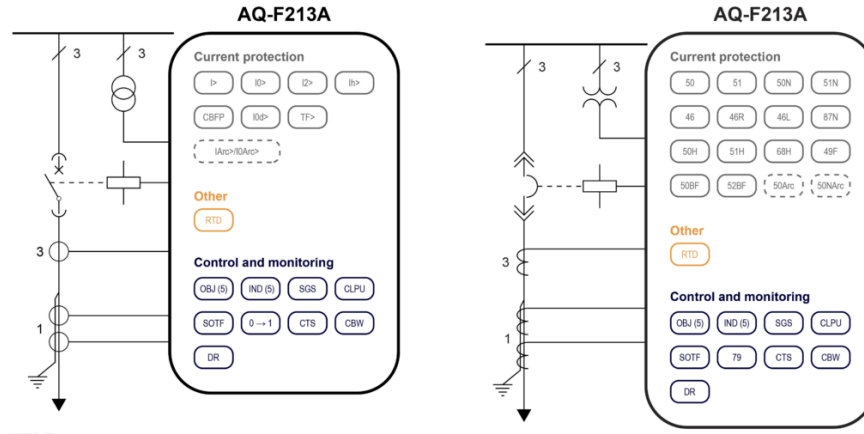
### Communication protocols

- IEC 60870-5-101/104
- IEC 60870-5-103
- Modbus/RTU and Modbus/TCP
- DNP3
- SPA

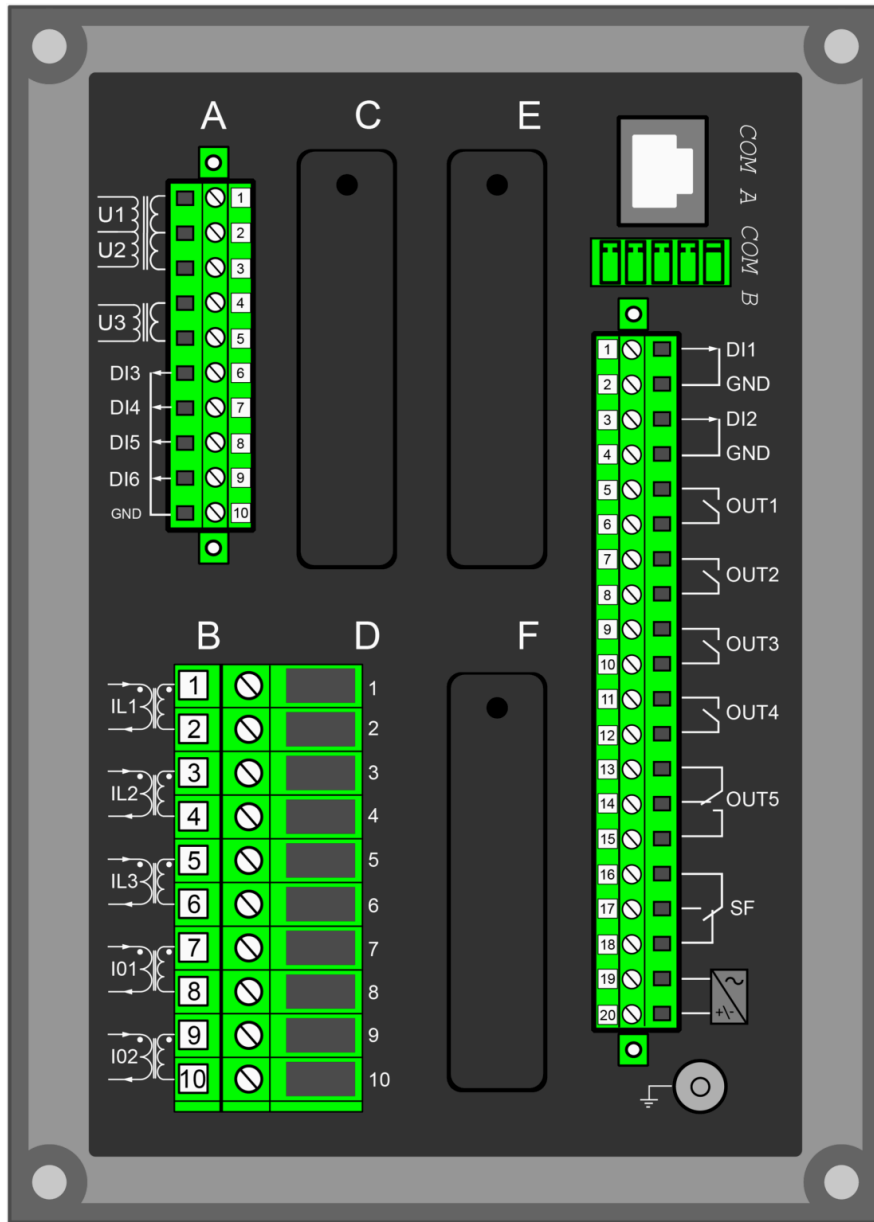
## ACCESSORIES

- 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

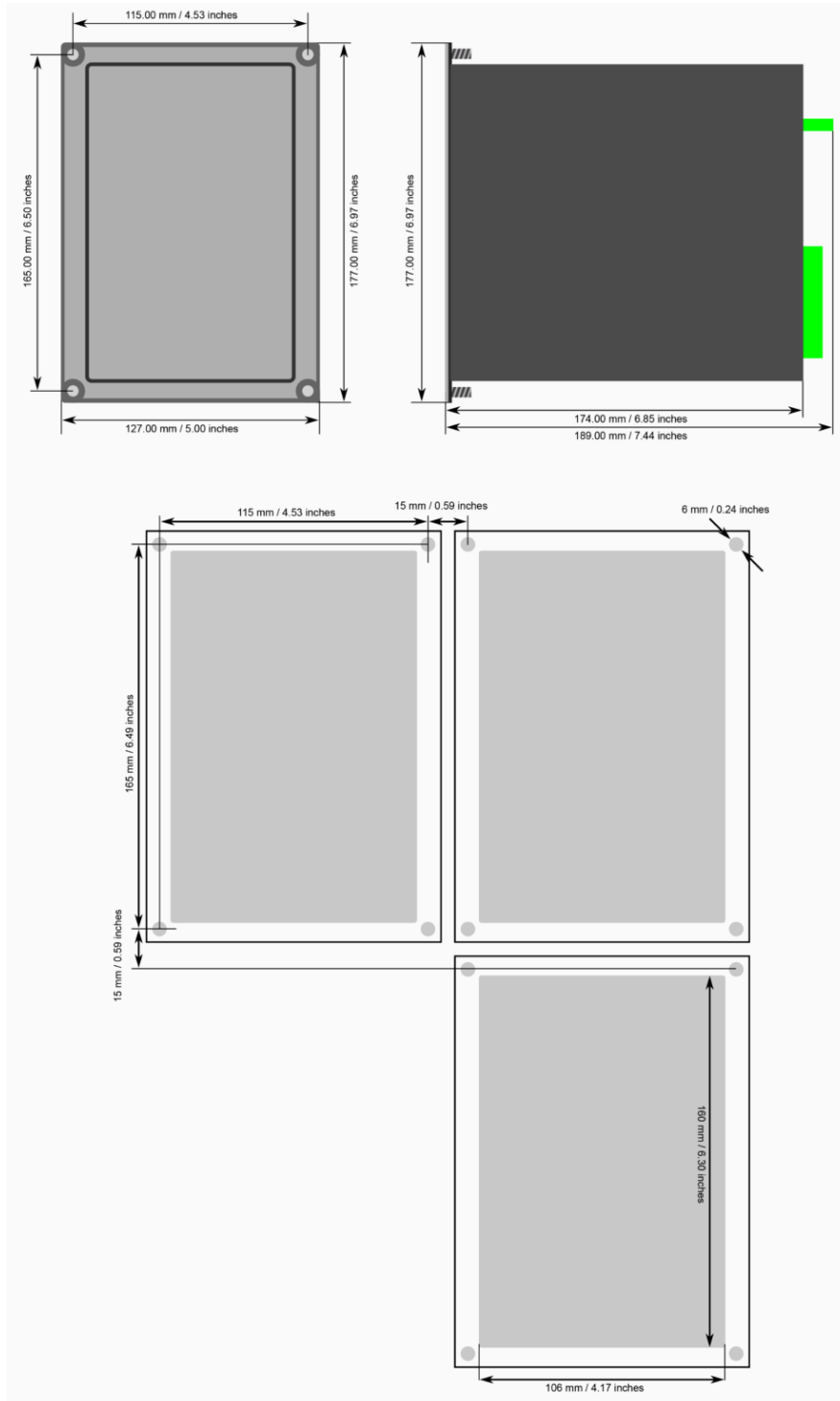
# Application Drawing



# Device Rear Image



# Device and Cut-out Image



# Order Code

